

Rock Products

DEVOTED TO THE PRODUCTION
AND SALE OF ROCK AND CLAY PRODUCTS.

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Vol. 1.

LOUISVILLE, KY., DECEMBER, 1902.

No. 9.

GRAPHITE AND ITS USES.

**One of the Most Widely Used Minerals
About the Production of Which
the General Public Knows
Very Little.**

One of the most widely used and probably the least thoroughly known products of the earth is graphite, for, notwithstanding the fact that it is used in every household in some form or other, there is not one man in a dozen can tell you anything about it should you ask him to explain what it is and where it came from. Speaking from a mineral standpoint, graphite belongs to the coal family and is classified with the carbon minerals, and a chemical analysis shows it to be substantially the same as charcoal and the diamond.

With its chemical analysis, practically the same as diamond or charcoal, it may appear a little difficult to point out the distinction. Probably to point this out in the most concise manner we should say that graphite is the form that carbon assumes when freed from chemical associations under conditions of low pressure. In other words, diamonds are formed from carbon under conditions of high pressure and protection from chemical influences; then we have in the diamond and the graphite the two extremes, as a diamond will change to graphite when protected from chemical influences and heated to a high temperature. It is in color from iron-black to a dark-steel gray with a metallic lustre. It is met with in metaphoric rocks and also in greenstone. It occurs foliated, columnar, radiated, scaly, granular, massive, earthy, etc.

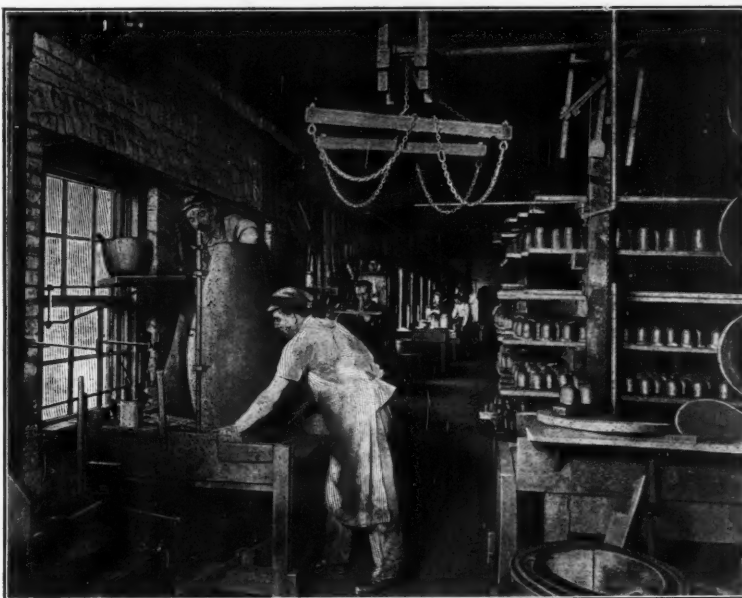
A Bit of Early History.

According to E. G. Acheson, who read a paper on the formation and manufacture of graphite before the Franklin Institute in 1899, the individuality of graphite was discovered in 1779 by Carl Wilhelm Scheele, a young apothecary of Koping, Sweden. Previous to this discovery a group of minerals and certain ores of lead were believed to be one and the same substance, or at least members of the same family. Graphite does not seem to have received any particular attention from chemists, however, until 1800.

During the last quarter of the Eighteenth Century, the diamond was a subject of much interest, in a chemical sense, and in the hands of the French chemists it was shown to produce carbon

dioxide when ignited in air. In 1796 Smithson Tennant showed that equal weights of charcoal and diamond yielded equal weights of carbon dioxide on burning, and they were thereafter associated together as carbon. In 1800 Mackenzie added graphite to the carbon group, by showing that it also, in equal weight, produced the same weight of carbon dioxide. Thus in the opening year of the present century, graphite was proven to be an elementary substance. Charcoal, diamond and graphite were then recognized as three distinct allotropic forms of the element carbon.

Graphite is quite widely distributed over the earth, being found in the older rock formations in various places, but it only appears under conditions of purity and accessibility for mining and refining to advantage in a few localities.



MAKING A RETORT OF PLUMBAGO AT THE JOSEPH DIXON CRUCIBLE CO.

The Home of Graphite Crucibles.

At the time Mr. Acheson discussed the history of this material he said that the mines of Ceylon alone employed about 24,000 men, women and children, and in the city of Nuremburg, Germany, the home of the famous Faber pencil, is another graphite center, there being about twenty-six factories employing 5,500 people making pencils. The center of the graphite industry in our own country is Jersey City, N. J., the home of the Joseph Dixon Crucible Co. Joseph Dixon, who then lived in Salem, Mass., began the manufacture of graphite crucibles in 1827. The graphite mines which supply the raw material for the Dixon works are at Ticonderoga, Hague and Graphite, N. Y. From the small start made by Joseph Dixon in 1827, has grown up the greatest

graphite industry in the world, making in addition to graphite crucibles and retorts, graphite lubricants, paints, foundry facings, stove polish, electrical supplies, and a confusing variety of lead pencils and crayons, together with a number of special articles of one kind and another.

As before mentioned, graphite crucibles were first made in 1827 by an American. Later the American taught the Englishman, and still later the practice traveled to France and Germany, Japan and China; and now the making of the graphite crucible seems to be confined to France, Germany, England, Japan, China and America. America, however, has taught the world.

The theory of the graphite melting pot is that, vastly better than anything else, it is a ready conductor of heat, and at one and the same time it is both strong and elastic. Again, it is refractory and durable. Being the best conductor of heat, the coal bill is minimized and quick melting possible. Being strong and elastic, it stands all reasonable shocks and accommodates itself to radically different temperatures. Being refractory, the most stubborn metals succumb and become fluid long before the walls of the pot show the slightest collapse.

Where Absolute Purity is Essential.

The study and use of graphite as a lubricant began some years ago and pure flake graphite has shown such remarkable qualities in this line that its use has been increased rapidly. In this use graphite must be absolutely pure, and also, according to the authorities on the subject, must be of the flake class. In other words, the amorphous varieties known as plumbago, black lead, etc., are not used for lubrication. Here is the way the Dixon people describe their lubricating graphite: "It is an absolutely

pure foliated, water-dressed and air-floated American graphite, from our own mines at Ticonderoga, N. Y. It has unrivaled smoothness and endurance. It is entirely inert, and not affected by heat, cold, steam, acid, or any known chemical. It largely increases the lubricating value of oils and greases. It may be mixed in water, oil or grease, or used dry, according to conditions or requirements."

A Strange Contrast.

The general method of purifying graphite was first established by Brodie. Just what date we are not informed. This method consists in grinding or otherwise reducing the crude metal to fine powder, washing out the heavier impurities, mixing fourteen parts with one part of potassium

[Continued on page 10.]

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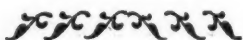
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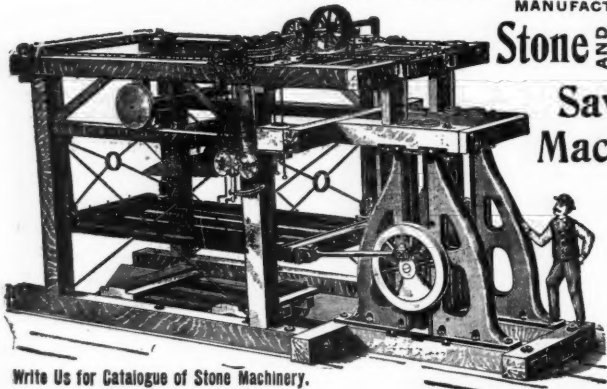
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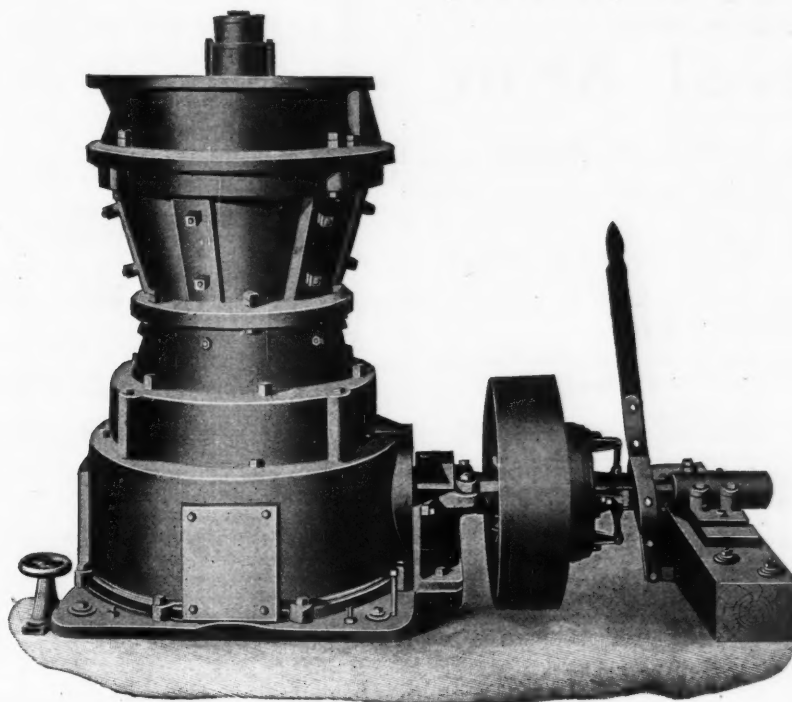
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The mission of ROCK PRODUCTS is to serve the trade in any and every honorable way possible, to promote better profits and make life more pleasant for those engaged in the business to which it caters. With this end in view, criticism is courted, and all are invited to use its columns to further ideas and suggestions for the good of the trade. The office, too, is at the service of the constituents of this paper; so when you want to buy or sell, or merely ask a question, write, and when you are in town, call and make it your headquarters.

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THE FRANCIS PUBLISHING COMPANY,
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LOUISVILLE, KY., DECEMBER, 1902.

OUR SLATE.

GREETINGS.

*We wish you all health,
happiness, peace and prosper-
ity.*

THERE is interesting matter in our Information Bureau every month, and this month is not an exception. Men who are looking for investments can find opportunities for buying stone deposits of all kinds, and machinery men can find people inquiring for machinery; and, in fact, there is something in it every month for those in almost all lines of business that is well worth careful reading.

AND still we hear about methods for the manufacture of artificial stone.

REPORTS from up New York way chronicle an advance in brick from 50c to \$1.00 a 1,000.

CLEVELAND, OHIO, is said to be in the throes of a brick famine.

WITH all the increased capacity the cement men seem to think there is still room for more.

THERE is need of a national association of retail monument men.

IMPORTING Portland cement seems to be quite a lively business yet, and practically so along the Pacific Coast.

LIME manufacturers are showing a commendable tendency to keep strictly up-to-date in methods and appliances.

THE returns show that this year's trade beats last year in all lines, and it looks like next year will also be good.

THE lime burners of the East have been hampered for fuel and, as a consequence, some points are reporting a scarcity of lime.

KANSAS CITY, Mo., reports say that there is a scarcity of lime in that market that has been hampering the building operations.

THE clay brick yards seem to continue on full time, just as if the lime and sand brick had never happened. Guess there is room for both.

IF it didn't take so much money to build Portland cement plants there is no telling how many men would go into the cement business.

WE would rise to remark that there is yet room for both natural and Portland cement—and natural cement is just as good as it ever was.

WITH bricklayers drawing from 60 to 75 cents an hour in Chicago and plenty of work to do, it does not look much like an oppression of labor.

WE HAVE said heretofore that burned clay makes good road material, and now we hear reports that some railway people are erecting kilns for burning it for railroad ballast.

CANADA, as well as the United States, is waking up to the possibilities of the cement industry and there is quite a crop of new plants projecting in that country.

WE HAVE not been able to successfully corner the methods so as to analyze them, but we continue to see reports of the process to manufacture marble in all manner of colors and shapes from chalk.

WITH all the artificial stone propositions before the world to-day the World's Fair at St. Louis will hardly be complete without an artificial stone building.

WITH all the cry of labor-saving machinery depriving men of work the call for men from all sides this year has demonstrated that there is "nothing to it."

REPORTS from Black Springs, Ark., state that slate prospectors are arriving there nearly every day looking for slate claims, which would indicate that the future may see quite an extensive slate industry in that locality.

THE Board of Public Works of St. Louis, Mo., have been experimenting with a new fireproof material which is said to be a coating resembling plaster of Paris. It is said to be a German invention.

THE probabilities of an Isthmian canal together with calls for cement in Cuba and other South American countries, is a suggestion to cement people that mill sites on the sea coast are advisable, to take care of the export trade.

THERE are still numerous reports of a scarcity of brick in various cities which have building booms on, from which we deduce that the brick men who are not able to have both turkey and pumpkin pie and play Santa Claus liberally, too, have not been attending strictly to business.

THERE continues to be quite a lot of interest manifested in oil for fuel and its cost, etc., as compared with coal and coke. On this point we are advised, by an engineer who has made a study of the subject, that crude oil at four cents a gallon is as cheap fuel when properly handled as Connellsville 72-hour coke at \$5.75 a ton.

MANUFACTURERS of lime, cement and other building material should make it a point to refer direct inquiries from consumers to the consumer's nearest dealer if they value the good will of the dealers, for a manufacturer can not expect to successfully sell to both dealers and consumers in the same community.

Consul Thornwell Haynes has written the Department from Rouen, France, in regard to a new road covering material mentioned in French journals. The composition is of interest at present, when so many trials are being made with oil, tar, etc. It consists of the mixture of scoria from a blast furnace and tar. The inventor (an Englishman) claims that the preparation, carefully pressed down with heavy rollers, renders the surface of the road impervious to water and that vehicles can pass at any rate of speed without the least inconvenience from dust or mud.

THERE seems to be a kind of salt war on in the West Coast region between the Federal Government and the large salt interests out there, in which it is claimed that the salt people have been obtaining wonderfully high prices for salt, and it looks like the government is going to take a hand at the question of naming prices for this article. We think the Government should go slow, for it may get itself into a great mess after a while, for while the people out there might want the prices lowered, there are other men in the country who will want the prices raised a little so that they can make a good profit, and they might claim that the rule should work both ways.

CONSUL General Robert P. Skinner sends the following to the Department from Marseilles, France:

"Lava blocks of French origin, concerning which I have inquiries come from the Department of Auvergne, a mountainous region filled with extinct volcanoes. The largest dimensions available are 2.5 meters by 1.5 meters (98.425 inches by 59.055 inches). These slabs are readily polished, and orders should be explicit upon this point. The business is carried on mainly in the city of Clermont-Ferrand, shipments being made from Riom, in the Department of Puy-de-Dome. Prices for average dimensions f. o. b. Riom are now the following:

"Slabs 1 centimeter (0.3937 inch) thick, and with a surface of 2 square meters (10.76 square feet) maximum without definitely determined dimensions, rough edges, per square meter, 14 francs (\$2.70). As above, also unpolished, but with dimensions determined, 17 francs (\$3.28). For slabs, with a thickness exceeding 1 centimeter, add to above price 1 franc (19.3 cents) per each additional centimeter. For polished slabs, one face only, add to above prices 28 francs (\$5.40) per square meter. All slabs exceeding 2 square meters in size command 10 per cent. additional.

"The term 'without definitely determined dimensions' means a latitude as to length and breadth in filling the order of 20 centimeters."

For the Retailer.

The Interstate Builders' Supply Association.

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Stirring Up the Social Spirit.

It has been sung till it is an old song, that the association idea is abroad in the land to such an extent that the trade or industry without an association of national scope is behind the times, but there are many who will yet persist in failing to see how association will fit their individual case, and this is especially so of men whose trade is almost entirely local. Take the retail monument men, for example, and there have been feeble efforts at organization, but none of these efforts seem to have borne much fruit. The trouble is that a majority of the men figure that as their business is all local there is no way in which a national association could help them out. The same idea applies to some extent among the retail dealers in building material, but many in this line, and especially those handling lumber, have taken up the association idea, but nothing like they should. The lumbermen have their retailers' association, and retail dealers in lime, cement and other building material along this line have various local associations, some of the State affairs, and others covering territory extending over three or four States, but, unfortunately, even in such cases there are too many who will not associate.

National Association Is Needed.

What is needed to start things just right is a national association, and one grand meeting a year, no matter at what time of the year, just so the time is set so as to be most convenient for the majority, and if it is summer time, so that all can make a vacation trip of it and take the wife along, so much the better—what is wanted is a grand coming together of the clans once a year. Now, I can almost hear a dozen or two of you saying, "What's the use? How could my going to such a meeting make Farmer Simkins pay me more for a ton of agricultural lime, or a barrel of cement, or how would it keep my competitor across the street from quoting just a shade under me to get that same order?" Well, I could write a whole book about how it would do you good to come to such a meeting, and directly and indirectly help you get more money, as well as pleasure out of your business, and that is what you want—and if you get that it is immaterial whether or not Farmer Simkins pays you better prices.

Engendering a Brotherly Spirit.

Just let us suppose you have made up your mind to have a try at attending a meeting, and you and your wife, and your competitor and his wife all start out to attend and take a little vacation from business. If it is a very long railway journey, there is nine chances to ten that you will all get very friendly before you get there, and if the two of you have been having some business wars you will come to an understanding that will mean peace and profit to both of you before you get there. If you do not manage it on the road, it is a foregone conclusion that you will before the meeting is over. This is no theory with me, for I have been along when it happened just that

way in other lines of trade; have seen men who had been such bitter business enemies in the same town for years that neither had made money, get together in the spirit engendered at a national meeting and come to an understanding that not only meant hundreds of dollars in profit, but best of all, insured pleasant business relations and a free exchange of confidences that made life worth living. I have met such men at home before they attended the meeting, where it seemed simply impossible to get them together on any sort of terms, and I have seen the change in spirit worked at the meeting where hundreds gathered to talk of broad-gauged methods, and heard them sing praises of the association together on the way home—and all this applied to local matters.

A Matter of Education.

One of the main points in a national association is to build up and foster local associations, but let us pass that point by for the moment, and assume that you are without local competition or have a good local understanding already, and still there is good room to get the worth of a membership fee and the cost of a trip once a year to a grand annual meeting. Such a meeting is the greatest place in the world to swap ideas and learn things, not only in open meeting, but in the general mingling together, man with man. No matter what kind of information you may be in search of, at a good meeting of this kind you will find something. It may be about building lime houses, how to handle plaster, or almost anything in connection with the business; you will find that some one is able to give you light, and, in turn, you may be able to give some other fellow just the information he is looking for. I tell you, you have no idea till you try it once, of what an education it is for men in the same line of business from all parts of the country to get together. They are all of a class, and they just naturally talk shop, both in the meeting and while chatting around in groups between sessions, and the man that doesn't learn something of value at such a meeting has only himself to blame. And, he not only learns while there, but goes home with his acquaintance extended in such a manner that he can afterward get information of value by correspondence.

The Subject of Fertilizers.

Let us take the subject of fertilizers, for example. We will find that there are many retail dealers handling fertilizers, and there is a pretty general recognition of the fact that the fertilizer trade has a very promising future, but the work of pushing it is frequently hampered by lack of specific information on the subject. With such a condition, then, where and how is there a better way for the trade as a whole to come to a full understanding of the subject than by a national association and a grand meeting together? If there is not enough information among the members themselves on the subject, those interested in producing fertilizers would be glad to come to such a meeting and help thresh out the problem of intelligently pushing fertilizers. Then there is the matter of the new things that are offered the trade from time to time, that is well worthy of discussion, and some old things that ought not to be in the trade, and, in fact, there is no lack of subject-matter that would bring out good information in a meeting of this kind. The only thing that is wanted is a spirit in the trade that will move them to have such a meeting at least once a year, and I believe a lot of the spirit is there, too, only it is lying dormant and needs stirring up—what do you think about it? C. R. O.

Business Good Out West.

S. Buch, Fargo, N. D.—Business is very good at present, and the outlook is that the cement trade will be four times greater next season. The lime trade is also good. I handle mortar colors, pressed and common bricks, fire bricks and clay, plaster, cement tile, encaustic tile and chimney linings.

Handles Nothing But Coal.

R. W. Santos, Norfolk, Va.—We are not dealing in brick products, nothing but coal when we can get it. If you have any anthracite please let us know and we will be obliged.

This Is About Right.

A. A. Huber, Piqua, Ohio.—Trade in cement is very active; in fact, I can not supply my trade, as I am not able to get enough from the mills. The lime trade is also good. You might assist the dealers by advising the manufacturers of building material to refer all inquiries for prices to his nearest local dealer, which will also assist in maintaining prices for reasonable margin.

Demand Exceeds Supply.

Thomas Robinson & Co., Real Estate Trust Building, Philadelphia, Pa.—We carry on a general building material business, including imported cements and other goods, such as plaster, laths, etc., and have all the business we can attend to. In fact the demand for cement is ahead of the supply. The same is true of the lime trade.

Handle an Extensive Line.

Penhollow & Groken, Perry, Ohio.—We handle hard and soft coal, coke, builders' supplies, drain tile, sewer pipe, baled hay and straw, and anything there is any money in, including fertilizers. Business in general is good, but the lime trade is poor and cement is scarce.

Fairly Good in Nashville.

C. M. Hughes & Co., Nashville, Tenn.—We have no new ideas to offer, but will say that business is good at present and the outlook for cement is good. The lime trade is fairly good. We handle lime, sand, cement, sewer pipe, fire brick, fire clay, laths, fire brick linings, and every thing belonging to this line.

Makes Grindstones, Too.

H. Larsen, Rawlins, Wyoming.—Business has been fairly good this summer. Cool weather is now setting in and we will soon close down the quarry for the winter. I have a gray sandstone, and make grindstones from same. Also quarry quartzite for rubble and have a good trade in white lime.

Business Has Increased.

Remine Bros., Johnson City, Tenn.—Our business has increased one-third or more compared with last year. We make a specialty of monumental work, trimmings for buildings, etc. There are no quarries in our neighborhood.

Lime Trade Best of All.

W. C. Minor & Co., Colonial Beach, Va.—Business is all right and the outlook ahead is fine. The cement outlook is good and the lime trade is the best of all. We handle general merchandise, brick, lumber, laths, etc., and are always glad to get good advice.

Have No Granite Quarries.

L. L. Pomeroy, Girard, Pa.—There are no granite and marble quarries in this part of Pennsylvania. We have some extensive sandstone quarries in Lawrence County, but our granite for monumental purposes is generally quarried in New England.

Workmen Seem Scarce.

James Gillen, Humboldt, Tenn.—I am engaged in the marble business and make it a specialty. I have lots of business but am not able to get all the workmen needed. I have no quarries.

A Scarcity of Fuel.

C. & G. P. Harley, Delphi, Ind.—It was impossible for me to be with you at Cincinnati, but I will try to be with you at the next meeting of the lime manufacturers. Trade is very good and the prospects are good for the coming year. We are hampered about making prompt shipments on account of coal being hard to get and wood is still scarce.

Same Old Gait.

Port Byron Lime Co., Port Byron, Ill.—Trade has not been as good this year as last, but has been nearly equal to it. We are doing nothing in the way of improvements, are still going at the same old gait of forty years ago, and we do not anticipate any increased demand for our product next year. Patent plaster and Portland cement people are cutting into our business.

Business Good in Cleveland.

Interstate Builders Supply Association, Cleveland, Ohio.—Business in Cleveland has been very good the past year, and while we have been handicapped more or less, owing to the scarcity of some of our supplies, we have, no doubt, been getting our proportion. Prospects in this vicinity are very bright for the next season and with our proposed group of public buildings, believe Cleveland will rank among the first cities in the country.

Letters From the Trade

SYRACUSE.

SYRACUSE, N. Y., November 25.—The building trade is experiencing a revival in Central New York, and material men are jubilant. They say that all throughout the East plants are having all they can do to supply the great demand for building material. The great demand has resulted as always, in the rise in price of almost everything in the building line. Brick works, stone quarries and lumber mills are so crowded that they are a long time behind in their orders. Labor is also scarce and high. Considerable speculative building is noticed, a phenomenon that was noticeably absent six months ago. The only explanation for it is that times are good and people are not afraid to risk their money in speculative enterprises. Among the new buildings that will be erected here in the near future are a factory for the Merrell-Soule Mince Meat Co. to cost \$100,000.00, a seven-story apartment house in James Street for a stock company, a new half-million-dollar hotel in South Salina Street and several lesser structures.

The Thomas Millen Co., of Syracuse, has been formed to manufacture cement and is capitalized at \$300,000.00. The directors are: Dr. Alexander J. Campbell, William N. Wiltzie and Frederick J. Snyder. Mr. Wiltzie was formerly a member of the firm of DeGan & Wiltzie, furniture dealers. He has withdrawn from this firm to go into the cement business.

The house of Henry Danziger, Jr., which is being built, is attracting a great deal of attention on account of the new building material which is being used in its construction. It is the only house like it in the city. The material used is litholite made by the Onondaga Litholite Co. The company is a young one, and Charles A. Lockard, manager of the Empire Portland Cement Co., is at its head. There are several sidewalks in the city made from the same material.

The Paragon Plaster Co. is rushed with business these days. The concern has expended upwards of \$15,000.00 in this city and Forestport, on the Black River, in establishing a new system of handling sand. At Forestport the company owns seventy acres of sand beds. By means of an elevator system a canal boat is loaded at the beds in twenty minutes, and at this point the company has facilities for handling four boats a day. The sand is first loaded into cars and taken to an immense hopper, from which it is conveyed to the boats by means of an elevator. At the plant in this city the company has erected a device for unloading sand, which can discharge a boat in three hours. The company reports a good business in brick.

Colton & Clark have plans for a proposed new hotel. The door and window castings will be of marble. The floors of the offices, corridors, dining room, cafe, writing room and sample room will be of noiseless rubber tile and there will be any quantity of marbleized columns and pillars. The building is to be twelve stories high and faced with Indiana limestone.

Two large monuments will be erected here as soon as the sculptors can finish their models. The largest is that in memory of Hamilton S. White and will cost in the neighborhood of \$15,000.00. The sculptress is Miss Gail Sherman. The other is a memorial fountain to be built from the Kirkpatrick estate, and is in charge of Thomas J. Leach. The fountain will be sixteen feet high. The stone work will be of polished granite and the figures of bronze. Both monuments will be placed in the public parks of the city.

Syracuse was one of the first cities to own an asphalt plant for the purpose of repairing her pavements. The plant, which was a small portable one, has recently been discarded on account of the expense in maintaining it. It was found that it was cheaper to let the work out by contract. The experiment was not very costly as the plant only cost about \$1,000.00. The city of Binghamton has just bought a similar plant, but will probably have the same experience as Syracuse had.

The Syracuse & Ontario Railway Co. has been

formed for the purpose of building a trolley road to Oswego from this city. This will furnish an outlet for the material men. The officers of the company are: Charles M. Warner, president; W. Judson Smith, vice president; W. B. Rockwell, manager and chief engineer; Edward J. Chapman, secretary, and Arthur R. Peck, treasurer. The Syracuse Rapid Transit Co. also intends to build a road to Oswego to cost in the neighborhood of \$1,000,000.00.

Peter Walrath, of Chittenango, a director in the Chittenango Pottery Co., died about two weeks ago. He was one of the organizers of the Bank of Chittenango.

During the coming year, it is stated at the city engineer's office, six or seven miles of pavement will be laid in the city. Brick and asphalt will be about evenly divided. There are now over forty miles of paved streets in the city. Several large sewers will also be constructed.

Rapid progress is being made by the Solvay Process Co. on its new picric acid plant, which is being erected on the site of the old blast furnace. Four two-story and several one-story buildings are being built. There is also a larger building with many tanks and complicated machinery for extracting the many different properties of coal tar, from which the picric acid is made.

The Onondaga Pottery Co. is building a four-story building adjoining its present property in Geddes. This company has had a remarkably successful year and its china is becoming known throughout the world.

Material men will be interested to know that the Hudson River Realty Co. is planning to build a city on the 12,000 lots, which it has bought on the Palisades near New York. Lyman C. Smith, of Syracuse, is one of the principal backers of the concern. No house will be built costing less than \$10,000.00. Beautiful parks are to be laid out and the place is to be greatly beautified before the lots are sold. The company is capitalized at \$5,000,000.00.

John Kelley has been awarded the contract for dredging and improving Onondaga Creek to prevent its overflow. In places the bottom of the creek will have to be cemented and various walls are to be built.

QUINCY.

QUINCY, MASS., November 25.—November has seen the granite business in this city fall off to a remarkable degree. The condition of affairs was anticipated consequent of the duration of the late coal strike, and its effect upon the country at large. The local industry is the last to experience the salutary effects of "good times," and among the first to retrograde when the industrial world is in anywise affected. The business of the manufacture and sale of monuments has become a hazardous one, from the fact that monuments, large or small, are considered luxuries. Local granite is used principally in their construction, so that, when the purse of the populace is pinched by high prices, or in hard times generally, the home trade is the first to suffer. This is especially noticeable at this period, and the effect more pronounced, coming as it does after a period of genuine prosperity. Local manufacturers are not cast down, however, and are hoping that the present lull is only temporary.

Rumors have been current the last month that the local branch of the granite cutters' union would submit a new bill of prices and a larger minimum wage for a day's work to the manufacturers. No official notice was presented at the last regular meeting of the Manufacturers' Association held on November 18. The men have until December 1 to submit the bill, and in event of their doing so, no suspension of work will result from its discussion by the parties involved. This is according to a previous arrangement made at the resumption of work following the last big strike three years ago. The agreement not to suspend work pending the submission of a new bill has two years to run. The differences between the cutters and manufacturers, if any occur, are to be submitted to a Board of Arbitration, both sides to submit to the decision of the arbitrators.

The Quincy Granite Quarries Co. is busy cleaning up the year's orders. The plans for the reorganization of the company are expected to be completed prior to January 1.

MacDonnell & Sons, of this city, have contracted with the city of Laconia, N. H., for a soldiers' monument to be erected in the public square at Laconia. The monument will be of Nesterly granite resting on a 7-foot square base and stand 32 feet high.

John Fallon & Sons have completed their work on the construction of the break-water and rip-raps at Nut Island, on the city water front. The work marks the outlet of the Metropolitan Sewer, and 55,000 tons of rough granite were used in its construction.

A fatal accident occurred at the yards of Long & Saunders November 21. James Orr, fifteen years of age, got caught in a shafting and before the machinery could be stopped was so badly mangled that he died in a few hours.

Peter T. Fallon, of the firm of John Fallon & Sons, was chosen to represent this city in the State Legislature at the recent election. Mr. Fallon received a very flattering vote and was high man in a field of eight candidates.

Mr. Goldsmith, of the firm of Benswinger & Goldsmith, of New York City, and Mayor J. A. Green and representatives of the Laconia (N. H.) city government were among those to visit the trade during the past month.

Marshall P. Wright, who is well and favorably known to the trade, was elected to the office of Norfolk county commissioner for a term of three years at the late election. Mr. Wright was the regular Democratic candidate, but received the indorsement of the Independent Republicans and won out by a large vote. Norfolk County is overwhelmingly Republican, and Mr. Wright's election was a handsome tribute to his worth as a business man.

Following are the shipments of granite for October: Quincy Adams, 5,579,205 pounds; Quarry R. R., 3,378,940 pounds; West Quincy, 11,079,750 pounds. Total, 20,037,895.

Flake a Specialty of Concrete.

The Beverly Granite Co., Beverly, S. C.—Our business has been about ten per cent. larger than last year and we expect to continue at about the same gate. We make a specialty of concrete work at this point.

Monumental Work a Specialty.

The Terra Alta Marble Co., Terra Alta, W. Va.—Our business the past month has been about one-third greater than 1901, and we have good prospects of equally as large a business in 1903. Our specialty is monumental work of all kinds manufactured from granite and marble.

A New Crushing Plant.

The Fehlig Construction Co., Theresa Avenue and Hickory Street, St. Louis, Mo.—We have just completed a new stone crushing plant including a No. 5 Austin gyratory crusher, elevator, screen, bins, boilers, engines and hoisting apparatus, which was erected by the F. C. Austin Manufacturing Co., Chicago, Ill.

Busy on Orders.

The D. J. Kennedy Co., Pittsburg, Pa.—Replying to your inquiry as to the probable effect on prices of the increased capacity in cement manufacture, will say that as the capacity of the cement industry will be about double for another year, the tendency will be to reduce prices. We have increased the capacity of our plant from 4,000 to 10,000 daily. We are very busy trying to fill our orders at present.

Lime from Waste Marble.

The Sky Blue Marble and Onyx Co., Riverside, Cal.—We have a quarry of sky blue marble and some brown onyx. We have also put in some lime kilns and are using the waste stone for making lime.

Wants Clay-Working Information.

William N. Shearer, West Cornwall, Conn.—What I am interested in most is clay to make pottery ware, terra cotta and white brick, and what I would like to know is what appliances are used in this work together with information in regard to burning.

Plaster Business Good.

The Michigan Gypsum Co., Grand Rapids, Mich.—Replying to your inquiry in regard to the features of the plaster business, will say that there has not been any particularly new features of development during the past twelve months. Our own mill, which was completed this spring, is now running smoothly and now up to its capacity, and our business is good and quite satisfactory. The demand seems to be steadily growing, and there seems to be no immediate prospect of its letting up.

Not So Encouraging.

V. R. Biggs, Iowa Falls, Iowa.—The lime trade here this season has been about the same as it was last year, and we do not anticipate much increase next year, because the corn crop here was a partial failure.

Gas Is Getting Too Scarce.

W. W. Holderfield, Muncie, Ind.—Business has been very good with me this year, which is my third year in the lime business and my trade is increasing all the time with a good outlook for next year. I burn with natural gas, but will have to change to coal on account of the scarcity of gas.

Producers of Fire Stone.

The Harrison Fire Stone Co., Mercer, Pa.—We are producing a stone that is used for lining cupolas, etc. It has a fire test of about 3,500 degrees and contains about 98 per cent. silica. We think we could help your rock wool manufacturer in the lining of his cupolas.

We Are Sorry.

The Baltimore Brick Co., Maryland Trust Building, Baltimore, Md.—We would kindly ask you to correct the report in your issue of November in regard to this company. Your matter is incorrect when you state that the company was recently taken out of the hands of a receiver. This company has never been in the hands of a receiver, but has been reorganized under the laws of Delaware.

NOTE.—We are certainly very sorry for this error and gladly make the correction. There is no intention on the part of Rock Products to make a misstatement in regard to any man's business, and when such misstatements do occur, we will thank the readers to set us right in the matter.—Ed.

Enlarging Their Plant.

Siluria Lime Works, Siluria, Ala.—Our business this year has been considerably above that of last year, and we expect still greater demand for lime in 1903. Also, we are increasing our plant considerably to be able to take care of the demand.

Good Demand for Crushed Stone.

Alton Lime and Cement Co., Alton, Ill.—Trade has been better this year than last and the outlook is good for next year. We intend to rebuild and probably remodel our plant with a view to reducing the cost of manufacture. The demand for crushed stone is good, both for concrete and road building.

Will Make More Lime.

The Ladd Lime Co., Cartersville, Ga.—Our trade has been very good this year and we look for large business next year. We are selling all we can burn and are enlarging our plant to meet the next year's demand.

Doubling Their Capacity.

The Newaygo Portland Cement Co., Newaygo, Mich.—It is our opinion that prices on cement will go down a little this coming year, though not much. We are doubling the capacity of our plant and are not seeking to increase our line of sales, because we expect to find it difficult to supply our regular trade another year. We are compelled to shut down our plant for two weeks for want of coal.

Making Considerable Improvements.

Bronson Portland Cement Co., Bronson, Mich.—We think the increased production of Portland cement will be fully met by the increased demand for the early part of next season if not all the year. We have installed a new tail-rope cable haulage system for handling marl, using twenty-four new steel cars. We have also added three rotary kilns to our plant and are installing the additional coal-grinding machinery and contemplate other improvements.

Just Starting Up.

The St. Louis Portland Cement Co., St. Louis, Mo.—Replying to your inquiry as to what effect the increased capacity in the Portland cement line will have on prices the coming year, it is impossible to say, because it depends on the general business conditions. We are just starting up our plant here and will have about 1,500 barrels daily capacity at the start.

Running Day and Night.

The Wheeling Wall Plaster Co., Wheeling, W. Va.—We have had our works going day and night to keep up with our orders.

Thinks Prices Will Continue Firm.

The Elk Rapids Portland Cement Co., Elk Rapids, Mich.—Replying to your inquiry in regard to the possible effect of the increased capacity of Portland cement on prices, would say that we think cement will be as high, or higher, this spring than it has been this season. The increased demand and the scarcity of coal will more than offset any bearish effect on the increased output.

Expect to Sell More Lime Next Year.

C. B. Dilley & Co., Logansport, Ind.—We are not manufacturers of lime. We expect greater demand for lime next year than this.

Curbing a Little Slow.

John Flanagan, Lamson, Wis.—The season has been fair with us on crushed stone, rubble, etc., but the demand has been a little slow for curbing.

Will Increase Their Output.

The Castalia Portland Cement Co., Pittsburg, Pa.—Replying to yours, will say that in our opinion the increased capacity of the Portland cement works in the United States will not have much effect on the price, as the new uses to which Portland cement is being put keeps pace with the increased output. Our output is now about two hundred thousand barrels per annum, and will be increased during the winter about 25 per cent.

Will Make Their Own Barrels.

The Standard Lime Co., Kendrick, Fla.—Our trade has been very good for the past twelve months, and at present we are running full capacity and are behind in our orders. The outlook for 1903 is very good. We are building a sawmill and barrel factory to make our own barrels, which we will have in operation January 1.

A Good Report.

Higgins & Harvey, Cayuga, Ind.—We have had a good trade this season, probably 50 per cent. better than last year. We expect a good trade next year, too, and are building a large lime house. We expect to enlarge our business some the coming year and take on some new lines of works.

A Merger at Granite City.

The Granite City Lime and Cement Co., Granite City, Ill.—Replying to your inquiry for news, we beg to state that the co-partnership of A. W. Elsemayer & Co. has been absorbed by the Granite City Lime and Cement Co. with a paid up capital of \$20,000.00. The purpose of the organization is to handle rock products, both wholesale and retail. Trade with us has been very good, and we look for a much better trade the coming spring.

Optimistic on Cement Outlook.

The Buckeye Portland Cement Co., Bellefontaine, Ohio.—We think the demand for Portland cement by the railroad companies for platforms, culverts, piers, abutments and bridges; by the cities for walks, curbs, sewers, etc., and by the National Government for public improvements; and especially the great variety of uses and the enormous amounts required for private work in every portion of the country, still exceeds the supply of American Portland and requires the importation of over a million of barrels for foreign cement. The present prosperous condition insures contracts enough next season to more than take all of the Portland cement that can be made in this country, so there is apparently no reason why the price should be lower next season. The output of Buckeye Portland next season will be considerably larger than heretofore.

Crushed Stone Coming to the Front.

The Akron Cement Works, Akron, N. Y.—We are manufacturers of Akron hydraulic cement. We make 150,000 barrels yearly; we mine the rock, burn and grind it and have all the business we could wish this year, and are figuring on another big year in 1903, for all indications point to a continuance of the present prosperity. Foundations are being laid for a large crushing plant here on our property, by the Akron Stone Co.; Mr. Eugene Brown, of Scottsville, N. Y., is president, and Thomas B. Lockwood, of Buffalo, is sec-

retary-treasurer. The Allis-Chalmers Co., of Chicago, have the contracts, which is sufficient guaranty that the plant will be first class. They are putting in a No. 4 and No. 6 crusher, which they figure will give an output of at least 500 yards of rock daily. The crushed stone business is coming to the front very rapidly of late, as all railroads are using it instead of gravel.

Light Trade in Paving Stone.

Cherry Bros., Bellwood, Pa.—In reply to your inquiry, would say that we have not been taking out any stone this season. Trade has been light in paving stone. There are no new quarries and no special improvements contemplated. Our specialty is paving stone for sidewalks.

Making Tiling Mostly.

The Huntingburg Brick and Tile Factory, Huntingburg, Ind.—I have been making tiling mostly the last three or four years, hardly any brick, and the brick that I did make were fire brick. We have good fire clay, shale and plenty of common clay in this part of the country, and there is a good opening for a sewer pipe factory.

Will Make Some Improvements.

S. D. Wine, Bridgewater, Va.—We have put out about the same amount this year as last, and expect to make some improvements for the next season. There is no other plant going in this section.

Will Build a Stone-Cutting Plant.

The Preston Bluestone Co., Rowlesburg, W. Va.—We have quarried one-third more stone than last season, and expect to put up a complete stone cutting plant very soon. We are at present furnishing the stone for a new bank building to be erected on South Street, Baltimore. Orders have been plenty with a good demand up to this date.

Expects a Great Demand for Cement.

The Vulcanite Portland Cement Co., Real Estate Trust Building, Philadelphia, Pa.—Replying to your inquiry in regard to the outlook in the cement trade, we beg to advise you that the increased capacity of the Portland cement mills will practically have no effect on prices for the coming twelve months. This is due from the fact that every indication points to an even larger demand for 1903 than that of 1902. The shortage of 1902 was about five million barrels. Some expert statisticians assume the shortage for 1903 will be about ten million barrels. The increased capacity will hardly amount to two million. The manufacturers will probably endeavor to keep the prices down in the neighborhood of the \$1.50 bulk at the works, in order to avoid any possible restrictions in the use of Portland cement. The increased demand is largely due to the increased usages Portland cement has been put to during the past year and a half. It is not likely, however, that they will be able to keep the prices down to this figure, as the demand being far greater than the supply, will cause prices to jump toward the middle and latter end of the season.

Lots of Orders Ahead and Building a New Plant.

The Hughes Marble and Granite Co., Clyde, Ohio.—At the present time we are over a year behind our orders. We commenced this morning cleaning our yards for a new building which will be 64 feet wide and 164 feet long, in addition to the plant that we have at the present time. You will therefore note that our trade has been steadily increasing for the last eighteen years, and up to the present time we have never bothered with any dealer or dealers and we do not know what their prices are on different classes of monumental work. We do nothing poorer than twelve-cut work, grinding all of our surfaces and finishing in the best possible manner that the work can be finished. We, therefore, have the best trade in this section of the country and get our prices for the work.

Enjoying Prosperity.

George W. Leighton & Co., granite and marble contractors, Deering, Me.—Business has been very good with us. Our business is almost entirely monumental and we are now cutting a large gateway for the city of Portland, Me. We could do some building work if we cared to. We have no trouble about material, as nearly all of ours comes from this State.

Cement.

The Rotary Kiln—Some Points About Its Use in Cement Making.

One of the main features in any Portland cement plant to-day is the rotary kiln, which is used for burning either wet or dry raw material. This kiln was originally invented in England, but it has remained for the American engineers to improve and perfect it so as to make it practical and as economical as possible. As has been explained here before, the rotary kiln is simply an iron cylinder mounted on rollers, the standard size to day being about six feet in diameter and sixty feet in length. An exception to this, which has also been previously noted, is the Edison kilns, which are said to be 150 feet long. This rotary kiln usually burns or roasts Portland cement material in about one hour; that is, it takes the raw material about that length of time between the receiving and discharging end. The operation is, of course, continuous.

Capacity and Coal Required.

The capacity and coal consumption of the kiln varies somewhat, depending on the equipment in detail, and is given as varying from 125 to 200 pounds of cement in twenty-four hours, using from 100 to 175 pounds of coal for each barrel of cement produced. It is generally conceded that the rotary kiln uses more fuel than was required in the best of the old-style kilns, but this is more than offset by other advantages. One of the important points in the setting of the rotary kilns is having it properly lined, and on this point I do not feel that I could do better than quote Lathbury & Spackman:

The Best Lining Brick.

"This lining of a rotary kiln, owing to the high temperature employed and the strongly basic character of the clinker, requires a special brick. In

addition to being as weakly acid as possible, bricks must be hard-burned in order to stand abrasion. High silica fire-brick, where exposed to intense heat, usually flux with the cement clinker, destroying the lining and injuring the product. To overcome this, many compositions have been tried, together with magnesite bricks and those made from cement clinker, etc., but the most satisfactory results have been obtained with the high aluminous brick. Experience has taught that rotary kiln fire-brick, whose principal elements are found between the limits herewith shown, will give the most satisfactory results in practice:

Silica (SiO_2).....	45.00 to 50.00%
Alumina (Al_2O_3).....	0.50 to 48.00%
Iron (Fe_2O_3).....	0.50 to 3.00%
Lime (CaO).....	0.10 to 0.50%
Magnesia (MgO).....	Trace to 0.35%

A Patent Fuel Apparatus.

The coal that is used in these kilns must be crushed and blown in through pipes at the lower end, and of course there is room here for some variety in the appliances used. The same engineers quoted above, Lathbury & Spackman, have a patent on an apparatus used in this connection. The patent is No. 677,457, and is dated July 2, 1901. This patent is based in the main on the utilization of heat from the clinker that has been discharged from the kiln to aid combustion.

The coal is prepared in the usual way and stored in feed bins adjacent to the kilns. The clinker after being discharged from the kilns is either allowed to drop directly into pits under the kiln room floor, or is elevated and discharged into steel towers. The fuel injectors are similar in general principles to those in ordinary use, but the fan which furnishes the air for forcing the coal into the kilns is connected to the storage reservoirs for hot clinker into which a secondary fan forces air; the basic principle being to force the cold air from the bottom where it comes in contact with the coolest clinker, and as it passes up through the mass is gradually heated by coming in contact with clinker of constantly increasing temperature, the air being drawn out from the top by the fan used for forcing the coal into the kilns, thus accomplishing the cooling of the clinker, and at the same time utilizing a portion of the heat. The cooling pits under the floor are the most satisfactory for the regenerating of the heat, but requires

the installation of a secondary cooling system. With these pits the temperature of 1000° can be obtained on the air blast, and the clinker cooled to such a point as can be readily handled by cars or conveying apparatus, but it is not sufficiently cooled to be fed directly to the mills. With the tower system, owing to a radiation, etc., the temperature of the air blast does not average over 500°, but this loss of heat is offset by the fact that the clinker requires no further cooling and can be delivered directly to the grinding mills.

Practice Beats Theory.

One of the peculiar results of the use of the hot blast is that the saving of coal used in burning is apparently greatly in excess of the theoretical saving from the heat units contained in the air blast. This is explained by the better working of the entire injection system, the thorough drying of the coal and its instant ignition on entering the kiln, which brings the heat zone further front, and by improving the entire efficiency of the kilns secures the additional saving over the theoretical.

In one plant where this apparatus has been installed, they say that the average production for three months exceeded 200 barrels per kiln per day of twenty-four hours, with a coal consumption of eighty-five pounds. C. M.

The Lakefield Cement Co., Petersburg, Ont., Can., is building some additions to its plant.

The International Cement Co., now operating at Durham, Ont., have purchased a site at Hull of 150 acres. They expect to also operate at Hull.

It is reported that John Cummings, of Ottawa, Ill., has transferred his interests and several hundred acres of cement property to the Marquette Cement Co.

The Great Lakes Portland Cement Co. has commenced the erection of a 2,000-barrel plant at Rogers, Mich. It is expected to have the plant in operation July 1, 1903.

The American Stone and Cement Co. is being incorporated by John G. McHenry, of Benton, Pa., and Charles D. Eaton, of Berwick, Pa., to build and operate works at Turbotville.

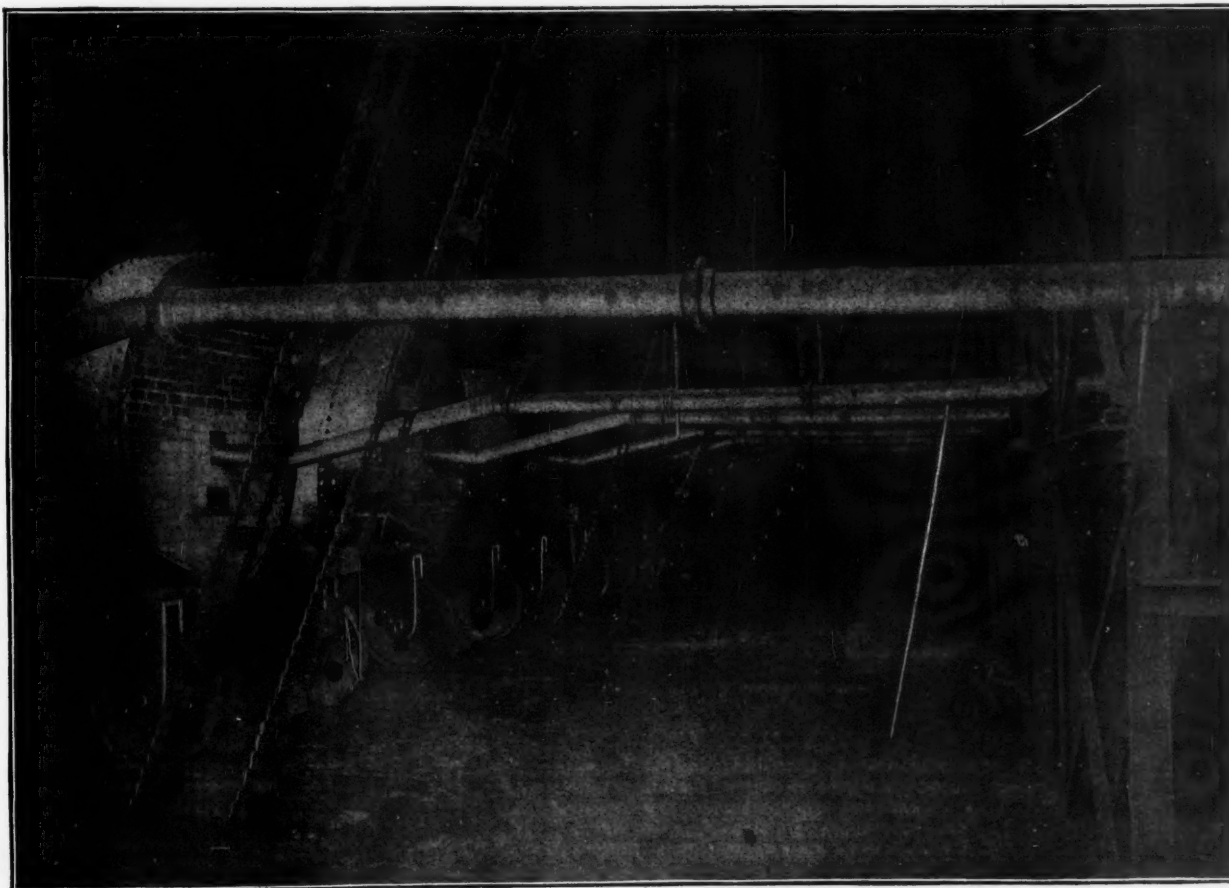
The Almandares Portland Cement Co. will erect a four-kiln cement plant on the North coast of Cuba, West of Havana. Lathbury & Spackman, of Philadelphia, Pa., will build the plant.

The Coplay Cement Manufacturing Co. will build a new cement plant at Coplay, Pa.

The Sun Portland Cement Co., Owen Sound, Ont., Canada, has completed its plant. The president of the company is Dr. MacDonald, of Wingham, Ont., and the manager is J. A. Cline.

It is reported that the Edison Portland Cement Co., which has been at work for more than two years constructing a plant at Stewartville, N. J., will have the plant ready to begin operations December 1. The capacity of the plant is given as 10,000 barrels every twenty-four hours, but at the beginning it will only turn out 1,500 barrels.

The Detroit Portland Cement Co., which has erected a plant near Linden, Mich., shipped its first car of cement along in October. The plant was started up in September with four kilns and it will have eight kilns when completed. Each kiln will turn out from 100 to 125 barrels of cement a day. The material used is marl and clay.



ROTARY KILN IN PLACE WITH FUEL PIPES AND ELEVATOR FOR HANDLING THE HOT CLINKERS.

The American Lime, Stone and Cement Co. has been incorporated at Watertown, Pa., with a capital stock of \$15,000.00.

The Rapid City Cement and Brick Co., Rapid City, S. D., has been incorporated with a capital stock of \$300,000.00. The incorporators are: I. Sweeney, James Halley, H. E. Chambers.

The Thomas Mullen Co. has been organized at Syracuse, N. Y., with a capital stock of \$300,000.00, to manufacture cement. The directors are: Dr. Alexander J. Campbell, William N. Wiltsie and Frederick J. Snyder.

The National Portland Cement Co. has been incorporated to manufacture cement, etc., with offices at 15 Exchange Place, Jersey City, N. J. The incorporators are: K. K. McLauren, Louis B. Dalley and H. O. Coughlan.

Messrs. William Lee, Son & Co., Ltd., London, Eng., are doing an extensive cement trade in South Africa of late in addition to their business at home. Their agents in South Africa are Messrs. Heddlie Bros., of Capetown, South Africa.

The American Cement Co., Philadelphia, Pa., is figuring on erecting another cement mill during the year. If they do the new plant will not be in Pennsylvania with their other mills, but will be erected near Norfolk, Va.

Reports from Allentown, Pa., state that B. J. and Thomas McDermott, Jos. Howard and James O'Donnell have gone to Napier Junction, Cal., to erect a cement mill for the Standard Cement Co., and will have a capacity of 1,000 barrels.

The Western Canada Portland Cement Co. (Ltd.), Winnipeg, Manchester, Can., is being incorporated to manufacture, sell and buy cement, plaster of paris, gypsum and building materials of different kinds. Capital stock, \$1,000,000.00.

Reports from Alpena, Mich., state that W. F. Cowham is organizing the Great Lakes Portland Cement Co. at Rogers City, Mich., with a capital stock of \$3,500,000.00. This is the fifth cement plant, two of which are in Canada, and three in the United States, that Mr. Cowham has established.

The Pacific Coast Marble, Tiling and Manufacturing Co., Spokane, Wash., has increased its capital stock to \$1,000,000.00. The incorporators and trustees are: G. S. Wilson, H. J. Earnest, Albert Allen, F. D. Allen and G. O. Nettleton, all of Spokane. The officers of the company are: G. S. Wilson, president; H. J. Earnest, vice president; F. D. Allen, secretary-treasurer.

The plant of the Currie Fertilizer Co., Louisville, Ky., was destroyed by fire November 28. The loss was estimated at \$400,000.00.

The Adirondack Graphite Mining Co. has been incorporated at Glen Falls, N. Y., with a capital stock of \$500,000.00 to develop graphite property.

Reports from Jackson, Mich., state that John W. Boardman, of that city, is now building a cement plant at Rockmart, Ga., for parties that will be making cement by next spring.

[Continued from page 1.]

GRAPHITE AND ITS USES.

chlorate and two parts of concentrated sulphuric acid, heating on a water-bath for some hours, washing thoroughly and afterward roasting at a red heat. If silica is present, a treatment with hydrofluoric acid is added to the process.

In the use of graphite as a lubricant we find a strange contrast to the abrasive metal made from another member of the same family, carborundum. In fact, carborundum and graphite are frequently produced at the same time and by practically the same process. We can get even a stronger contrast between the lubricating qualities of graphite on the one hand and the hard cutting quality of diamond on the other, for, as has been stated before, they are virtually the same metal, but in different form.

Origin of the Lead Pencil.

For making lead pencils graphite must be purified also, the degree of purity being the main guide in the grading of lead pencils. Any man who has used pencils to any extent, has noticed, no doubt, the difference in the material, and has also observed frequent grating impurities. The degree of purity, however, does not make up all the difference in pencils, for there are different vari-

Borrowdale mines which were operated during the Sixteenth Century.

Is Produced As Well As Mined.

From experiments which seem to have been conducted at carborundum works, Mr. Acheson demonstrated the practicability of producing artificial graphite, and organized the Acheson Graphite Co., which built and is operating works at Niagara Falls. The manufacturers of artificial graphite take the stand that the supply available by mining is very limited as compared with the apparent future needs of the industry, and that it will be necessary to produce as well as mine graphite to supply the demand in the future. We have no data at hand at present showing the exact amount being mined or that might possibly be mined, nor, for that matter, data showing the exact requirements of the trade in quantities, and are consequently not prepared to express an opinion on this point. We note, however, that new graphite deposits are being discovered from day to day and these discoveries will probably continue.

A Word from Abroad.

In connection with the graphite industry there is an interesting report at hand from the United States Consul General, O. S. Hugh, at Coburg, Germany, who has had a number of inquiries from the United States in regard to the methods used in Germany for refining graphite. In reply to these inquiries he furnishes the following information: "I have just been informed that by the 'Langbein Process,' crude graphite is refined by grinding the powdered material with a calculated amount of ammonium fluoride, charging the

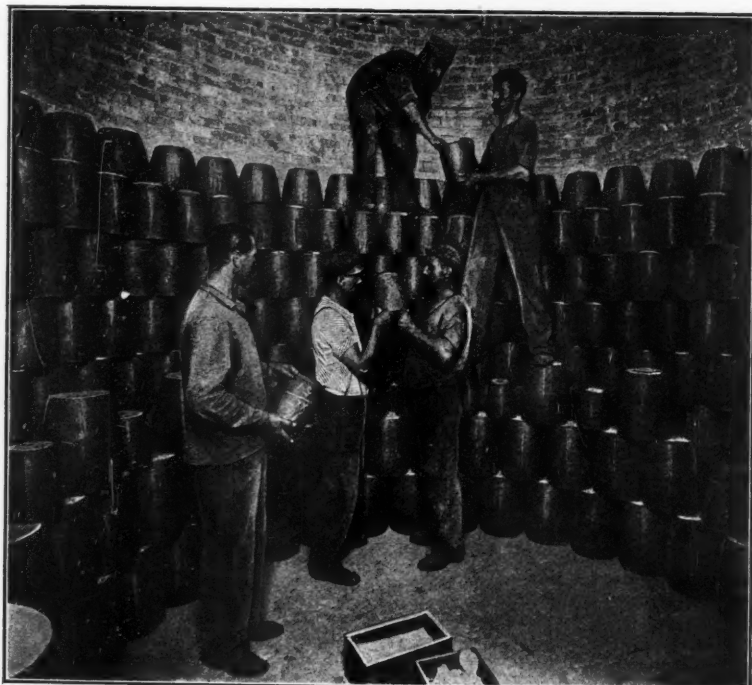


SOME WELL-KNOWN GRAPHITE PRODUCTS.

eties of graphite and some seem to be better suited to this work than others, but without being reasonably pure the high-grade pencils are not possible out of any variety.

According to the best information at hand, the first use made of graphite was in writing, an account of which was found in the writings of Conrad Gassner on Fossils, published in 1565, in which a picture of a lead pencil is shown and described as being made of a certain kind of lead sharpened to a point and inserted in a wooden handle. This pencil, it is generally assumed, was made of graphite from what is known as the

mixture together with a certain volume of sulphuric acid into a hydrofluoric acid still and distilling. The evolved silicon is collected in a receptacle containing ammonia, with which it combines, forming ammonium fluoride suitable for using again, gelatinous silica being also produced. The partially refined graphite is separated and further purified by washing and subsequent heating with caustic alkali or alkaline carbonate solution. Finally, ammonium sulphate is recovered by neutralizing with ammonia the mixture of sulphuric acid and sulphates remaining in the still."



PIILING GRAPHITE RETORTS AND CRUCIBLES IN THE KILN FOR BURNING.



A BUNCH OF GRAPHITE PRODUCTS.

Granite.

BARRE, VERMONT.

Early in the spring of 1902 the granite manufacturers in the vicinity of Barre, "through the medium of the Manufacturers' Association," brought into existence what has been known as the Barre Granite Exchange.

In recent years the competition among the manufacturers had been such as to reduce the prices on monumental work to a point where all profit had vanished.

This fact had come to be recognized by all the manufacturers, and with the object in view of remedying this condition of affairs the Exchange was started. Among as large a body of men as the manufacturers are it was a hard matter to get them to agree unanimously on any one plan that would remedy the existing conditions. But the plan adopted and put in operation under the name of the Exchange seemed to meet the ideas of a large majority of the manufacturers, and had the minority acquiesced in the plan adopted by the majority its success would have been assured. In all well regulated bodies it is a good policy for a minority to acquiesce in the findings of the majority, and retain the strength of a united body. And if they hold strong convictions that their ideas are better and more practical than those of the majority, by consistently advocating them. If their ideas are right it will not be long before they bring the majority around to adopt them, and thereby earn the honor and respect of the majority for their good judgment.

The suspension of the Exchange was not caused by its failure to meet the expectations of its promoters, but from the fact that it did not receive from the start the hearty and unanimous support of every manufacturer.

EXCHANGE WAS MISREPRESENTED.

Taking into consideration the opposition and the misrepresentation it had to contend with from the start, it is only a wonder that it accomplished as much as it did—misrepresented as it was, to be a gigantic trust formed for the purpose of placing the retail dealers throughout the country within its power and exacting such prices as its greed would dictate, and that the only interest that would be considered would be that of the manufacturers. In view of these gross misrepresentations need it be wondered at, that there was considerable opposition among the retail dealers and a strong effort made by some of them to render it

ineffective? Had the aims of the Exchange been such as a large number of the retail dealers were led to believe it was, than there would have been good grounds for them acting along this line. But the manufacturers had no such selfish ideas so far as prices were concerned. Their one great aim was to establish as near as possible a uniform price on all monumental work—a price that would at least cover the cost of producing the work from the very best material, and the highest grade of workmanship. This aim, we think, should commend itself to every retail dealer doing a legitimate business, and who has the permanent welfare of the trade at heart. By getting near a uniform price on monuments the retail dealer has nothing to fear. He can start out on the level with his competitors, and his honor and integrity being well known in the place where he is located will always insure him a fair share of the trade in his locality. Under such conditions no one would deal with a man whose only stock was his designs, and whose capital consisted in his car fares in preference to a man established among themselves and doing a legitimate business. If all other considerations were equal, therefore, by eliminating this kind of competition "which was one of the principal aims of the Exchange," the retail dealers would have reaped a large amount of benefit and removed a source of competition that has been an eyesore to them for years. The basis of competition would be changed from the point of cheapness, irrespective of quality, to a point demanding the best quality, prompt service and honorable dealings. We believe that the time is not far distant when the manufacturers will get together and take up the work that has been just laid down, bury all their personal ideas, which differ only in the details as to how this work can be best accomplished, and agree on something that they will unanimously support and place the granite monumental business on a better business footing than it has been for years past.

BARRE AND THE WORLD'S FAIR.

Plans for a State building, representative of Vermont, to be erected at the World's Fair at St. Louis have been prepared by Walker & Smith, architects, Montpelier. A bill has been introduced in the legislature to grant an appropriation for its erection, and it is to be hoped that the legislature will deal with this in a very liberal manner, and give such an appropriation as will insure the erection of a building that will be thoroughly representative of the unlimited sources of wealth possessed by the State in building material. A building erected from her various granites, marbles and slates would make it one of the attractions of the Exposition, and at the same time bring prominently before the millions of visitors the three principal sources of natural wealth in the State.

It is to be hoped that the granite manufacturers of Barre will not allow to pass the great opportunity this exhibition will present of making a substantial display of their products. A fine display was made at the Chicago exhibition and the indirect benefits of that display can hardly be

realized, and certainly far more than repaid all the expenditure incurred on its behalf. Great improvements have been made since that time in the way of designs, and a higher grade of artistic work. Any outlay spent in an effort to bring this prominently before the public will more than repay itself.

GOOD COMES OUT OF NAZARETH.

'Tis often said that "a prophet is not without honor, save in his own country," and this is verily true of the position taken by the citizens of Vermont in reference to their great granite industry, but after a visit of the legislature, a delegation of some two hundred and fifty members representing every town of any size in the State, to Barre, where they were received with the hospitality which is always extended by big men (and you are sure to find many of them where they work in wood or stone), there has been much talk of Barre and her industry, and it is hard to estimate the value of this visit.

It seems certain that some of them will realize the great future in store for this industry and will locate in Barre and share in enjoying the prosperity attending the town and its industry.

It is indeed desirable that Vermont citizens, and especially those located in the granite country, will do their part toward strengthening the arms of the industry and make it strong unto themselves.

The reorganization of the exchange will mean a staple price for all granite work, and that will mean prosperity for all those who are operating in that district. Then the fact that granite from Barre is gaining a foothold all over the world is due to its merit, and the fact that it can be shipped almost anywhere on a reasonable basis.

The writer was surprised the other day in a Western city to find that Barre granite was accepted for a large bank building, because of the quality of the rock and the price it could be bought for, and as the years go by and the dealers realize and further the merits of Barre granite, you can expect to see a large increase in this trade. This ought to be true especially in large cities in the East, and it only needs a steady pull together by the manufacturers, quarrymen and their cohorts, the railroads and steamboat people.

SNAP SHOTS.

One of the attractive sights to a visitor of Barre recently was to see them quarrying stone. We give on this page a small picture of a well known quarry at Barre, Vt., and those who have never visited that point will be interested in how they do it.

Whitcomb Bros., who have been operating in the manufacture of machinery in woodworking as well as quarrying lines, are turning their attention to a new quarry opened up this past summer, which bids fair to be one of the largest in that section catering to the building trade. They have made considerable effort lately to get a share of that business and there is no doubt, with their excellent facilities and quality of stone, that they will find it a profitable business.

Smith Whitcomb Co. manufacture a special crane for the granite trade, and have been quite successful in pushing them. Manager Care talked with pride of this excellent machine to our correspondent recently. There is no doubt that in the near future this machine will be illustrated in these columns.

The new quarries opened up the past month are those known as Bond & White and the Manufacturers Quarry Co.

Among the visitors at Barre this past month was Mr. Reinhalter, of Philadelphia. Jos. P. Reinhalter & Co. take as much interest in Barre as they do in the Quaker City, owing to having a good cutting plant here.

Mr. Ham, of Ham Bros., Shelbyville, Ind., was a visitor at the quarries this month. He was very much impressed with the extent of the industry, and enjoyed his visit very much. He reports business as being very good in his locality, and left orders for three carloads of work.

Canton Bros. have moved into the large, commodious and up-to-date plant that has been recently erected by them. Their increasing trade outgrew their old quarters. With their new facilities they will be able to meet all the demands of the trade with promptness.

A bill has been passed at the present session of the legislature incorporating the Granite Manufacturers' Association, and in all probability a reorganization under this charter will be made in the near future.



A TYPICAL SCENE IN THE LIGHT GRANITE QUARRIES OF VERMONT.

Lime.

The Study of Limestone.

To the average man the term limestone leaves a general impression of stone that can be made into lime by burning. There is also a general impression in the popular mind associated with the term, that limestone is frequently impure, having mixed in its make-up several foreign substances of which no attempt is generally made to form a concrete idea. The first step under such conditions to the study of limestone is to arrive at a better understanding than this of what limestone is constituted.

Speaking technically, limestone is a term which has been applied from the earliest times of which we have any record to any rock in which carbonate of lime (CaCO_3) is the chief ingredient. Now, while in a strict sense all such rock may properly be classed as limestone, a different classification is generally recognized in the stone industry. For example, marble is a form of limestone, as is also chalk and a variety of other formations. It would of course appear odd to the average man that fine black marble not only frequently contains as much carbonate of lime as high-grade limestone, but will on burning produce a fine white lime. But this is a fact which those who analyze stone are familiar with.

Limestones Are of Organic Origin.

The limestones are mainly, though probably not entirely, of organic origin, resulting from the deposition and aggregation of shells, corals, etc.; but at the time of deposition other materials, such as clay, sand, iron oxides, iron pyrites, mica, etc., may have been included, thus producing a large number of grades, which are frequently distinguished by names which imply the presence of the most characteristic impurity. Siliceous, argillaceous and micaceous limestones are names in common use. Usually the presence of these impurities is an objection to the stone for almost all the great variety of uses to which limestone is applied.

The Oolitic Formation.

We have before us an interesting discourse in the *Stone Trade's Journal*, of England, concerning limestones and their analyses, in which it is stated that in addition to the organic fragments there are formations known as Oolitic grains. These grains consist generally of a grain of sand or a chip of shell, probably with either a deposit of carbonate of lime or calcareous mud. These vary considerably in size and in these variations we get the great difference observable in the class of limestone termed Oolitic. In some the grains are so small as to be distinguishable only under the microscope, while in others the grains are very prominent. These various parts formed in the first place a species of calcareous mud, in which different impurities such as sand, formed by the disintegration of quartz or igneous rocks, or clay, formed in a similar manner from early sedimentary rocks and formations, were frequently intermixed. Such a deposit would, in the first place, form a rock closely resembling chalk, but by subsequent changes this loose, earthy formation became compact, and in many cases, crystalline, chiefly on account of the solution and redeposition of the calcium carbonate (CaCO_3). In this solution and redeposition, different minerals were taken up and amalgamated, giving rise to the various varieties of marble and limestones known at the present day.

The Ideal Limestone.

The ideal limestone is composed of pure calcium carbonate, otherwise known as carbonate of lime, having a composition of 56 per cent. lime (calcium oxide- CaO), and 44 per cent. carbonic acid (CO_2). On account, however, of the conditions under which the limestone beds have been deposited, it is practically impossible to find a stone which comes fully up to the ideal in the matter of purity. Being a sedimentary rock, it must of necessity contain more or less siliceous matter, either in the form of silica or sand (SiO_2), or else in the form of a metallic silicate, generally iron and alumina. The amount of siliceous matter varies greatly, oc-

curing in some of the stones only as a few tenths of 1 per cent., while in others as much as 50 per cent. may be found, in which latter case the rock is considered by some to be a sandy limestone, and by others as a calcareous sandstone.

The Origin of "Dolomite."

In nature, also, limestone is generally associated with magnesium carbonate (MgCO_3); in fact, it is scarcely possible to find a limestone entirely free from a certain percentage of magnesia, varying from fractions of 1 per cent. to such a percentage that the stone becomes a magnesian limestone or dolomite, which contains normally lime, 30.40 per cent.; magnesia, 21.70 per cent., and carbonic acid, 47.90 per cent. Dolomite is distinguished from limestone proper by not so readily effervescing when placed in any of the acids, by the ease with which it crumbles, and by its being highly crystalline and often granular in formation, the crystals being very small, yet distinct, giving the rock the appearance of a fine sandstone. Its name, it may here be mentioned, is due to the discovery of its composition in 1791 by a French geologist named Dolomieu.

Marble as a Standard for Classification.

In addition to silica, or the silicates, and magnesia, all limestones contain certain proportions of iron in the form of oxide of iron (Fe_2O_3), of sulphide of iron (FeS), both of which exert an appreciable influence upon the value of the stone. All limestones may be classed under one of the following heads, viz: 1. Fat, or rich limes. 2. Poor, or sandy limes. 3. Hydraulic limes. 4. Natural cement stones. In classifying these stones, marble may be taken as the standard, with a proportion of pure calcium carbonate equal to 100, and producing upon burning a proportion of calcium oxide equal to 100.

Fat and Poor Limes.

The fat limes are represented in this article by white chalk and Oolite, containing respectively 98½ calcium carbonate, ½ magnesium carbonate, 1 clay, and 95 calcium carbonate, 2 magnesium carbonate, 3 clay, giving upon calcining 98 calcium oxide, ½ magnesia, and calcium oxide 95½, magnesia 1½.

The lean limes are represented by siliceous Oolite, containing calcium carbonate 70, magnesium carbonate 3½, clay, etc., 26½; producing calcium oxide 70, magnesia 3½.

Three Divisions of Hydraulic Limes.

The hydraulic limes may be classed in three divisions, viz., feebly hydraulic, represented by gray chalk, having an average composition of 92 calcium carbonate, 8 clay, etc., and producing in the burnt stone 86½ calcium oxide; moderately hydraulic limes, represented by dolomite, containing 51 calcium carbonate, 40 magnesium carbonate, 9 clay, and giving in the burnt stone 53½ calcium

containing 86 calcium carbonate, 14 clay, producing 81 calcium oxide; strongly hydraulic limes, represented by blue lias, containing 79 calcium carbonate, 21 clay, and producing 72 calcium oxide. The hydraulic character of some limes is due to the presence of silica, iron, and alumina (Al_2O_3) in the form of clay, and as these constituents increase in quantity up to 30 per cent., so is the hydraulicity of the lime produced in the calcined stone increased. 4. Natural cement stones. These are represented by the argillaceous limestones, containing 24.74 siliceous matter, 41.80 calcium carbonate, 8.60 magnesium carbonate and 6.30 oxide of iron.

What to Look for in Analyzing.

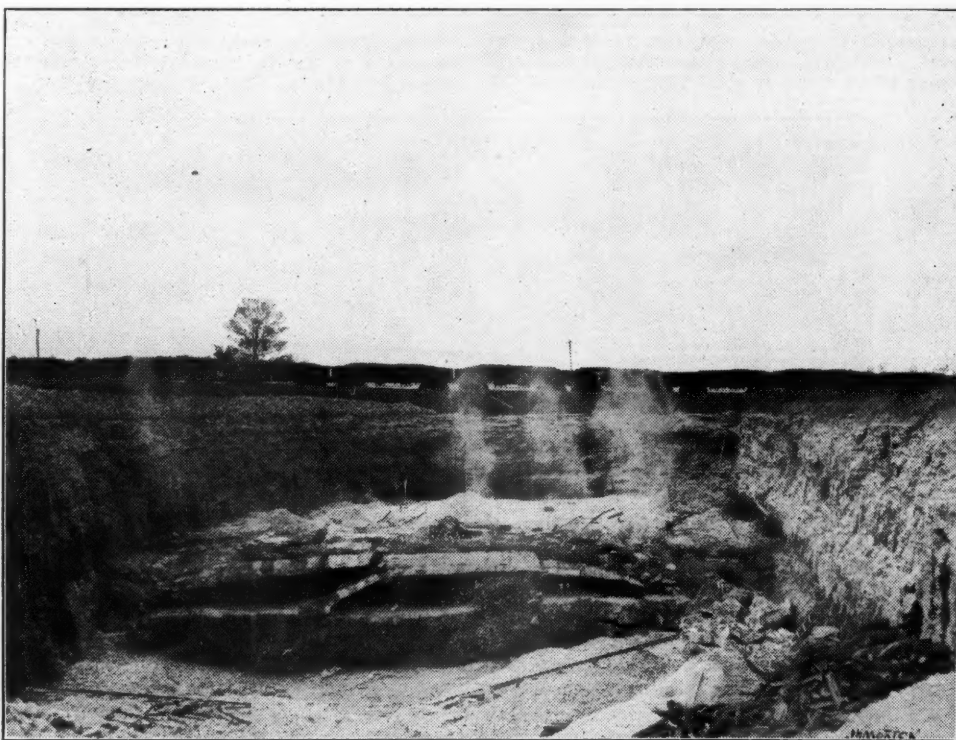
According to the author of the above discourse, for the purpose of analysis, lime and limestone may be considered as synonymous, inasmuch as lime (CaO) is produced from limestone by calcination, the difference being that the carbonic acid has been driven out of the stone in the process of converting it from calcium carbonate (CaCO_3) into lime (CaO). The chemical analysis may be there fore carried out in both instances on similar lines. The constituents to be looked for are: water, silica, oxide of iron (Fe_2O_3), alumina (Al_2O_3), calcium oxide, magnesia, potash and soda, carbonic acid, and sulphuric acid (H_2SO_4).

Pleased with the Lime Association.

B. M. McKinlay, Garfield, Ark.—Am glad to hear of the lime people getting together, and think it may eventually prove of great advantage. Trade has been good but transportation facilities the worst ever known. I expect to have fully as good business next year as I have had this year, but am not enlarging my plant any, merely keeping it in good working order. I wish every lime manufacturer knew what it costs to burn lime, for I think if they did better prices would prevail.

An Interesting Blast.

The Seneca White Lime Co., Fostoria, Ohio, made a very interesting blast of limestone recently. The shot consisted of thirty holes, which were drilled back ten feet from the face of the ledge, three feet apart and fourteen feet deep. The holes were loaded with about six pounds of dynamite each, and when the blast was touched off it loosened up about 1,000 tons of stone. They fired the blast by electricity, but before touching it off they got a camera on the ground, and we are reproducing two snap shots that were taken. One shows the blast in action, being taken at the moment of explosion, and the other one shows the result of the blast. The stone used is a pure dolomite, and is very close-grained and heavy for its class, taking a polish like marble. This is the stone from which the company manufacturers the celebrated Fostoria white lime, which is so highly prized for glass making purposes as well as for finishing purposes in the building trade.



SNAP SHOT AT THE MOMENT OF EXPLODING A LARGE BLAST AT THE STONE QUARRY OF THE SENECA WHITE LIME CO.

Pointers About Agricultural Lime.

FOSTORIA, OHIO.—We believe we are pioneers in the manufacture of agricultural lime in North-western Ohio, and as we believe there is an unlimited market for lime for this purpose, we desire to give the manufacturers a few hints for their benefit, based on our experience.

Qualifications to the Term "Fertilizer."

First—Lime for this purpose should not be called a fertilizer without qualifications. Very little lime is absorbed by the plant as a food. It acts on the soil as a *solvent*, releasing the plant food from the soil so that it may be more readily assimilated by the plant. It is also a sure cure for the acidity of the soil, and best results are obtained from its use upon stiff, clay soils and old, worn-out, sour land. Bulletins on this part of the subject are issued by nearly all of the State experiment stations in the East. These bulletins contain much valuable information and cover the subject thoroughly. Maryland, Rhode Island and Pennsylvania experiment stations have issued especially valuable bulletins.

Advice About Grinding and Packing Lime.

Second—The lime should be fresh-burned and coarse-ground, not finer than kernels of wheat nor coarser than grains of corn. In this form it can be readily used in most fertilizer drills, and the unslacked lime is much more desirable for this, and the further reason that unslacked lime contains much more caustic than the slacked lime. We market it in barrels, in jute bags and in bulk in carloads. In less than carloads, in barrels only. We use old sugar barrels which contain about 400 pounds each, and bags which contain 200 pounds each. These bags cost about seven cents each, and it is worth about one cent each to furnish twine and sew them. About three-fourths of what we sell is sold in bags. Paper bags will not do, as the lime soon begins to slack and will burst them; we have tried both. Dealers and farmers complain of the weight, and they would prefer bags containing but 50 pounds to 100 pounds each. But when the cost of bags is taken into consideration, together with the price, they are willing to pay for agricultural lime; it would be impossible for the manufacturer to use the smaller bags and have any profit from the business. Proper grinding and packing machinery is necessary to handle and prepare the lime; otherwise the labor cost would spoil the profit. Ground lime is very disagreeable stuff to make and handle on account of dust, and unless this is provided against it is very hard to get laborers to work at it, especially in hot weather.

Favors Magnesian Limes.

Third—High carbonate limes are not so well adapted for the manufacture of agricultural lime as are the magnesian limes, owing to the fact that the former will air-slack much quicker and become so fine that it will clog the drills; also, to the further fact that it can not be manufactured ahead and stored, even in air-tight bins without so slacking. The magnesia is just as caustic as the carbonate lime, and, by the best authorities, is considered about as valuable as the carbonate for agricultural purposes. Actual field experiments also confirm this. Agricultural lime is bought and used in March and April and in August and September. Very little is used during any other of the months of the year. This is also a handicap for the manufacturer, as it is also the season of greatest activity in the demand for lime for other purposes. Storage capacity must be large, strong and air-tight, and even then the lime will swell a little and strain your bins and building in the summer season. If you are not situated so as to have good shipping facilities, and capacity to take care of at least five cars per day during the season, it will not pay you to undertake the manufacture of agricultural lime. It requires considerable advertising, and we find that dealers are slow to take hold of and push its sale. In the West you will have to create a demand and educate farmers and land owners by the use of circulars, which will furnish them with detailed information. By doing this in the vicinity of your plant you can create a good retail business at home, which will gradually grow on your hands. No manufacturer should attempt to get out a circular without first thoroughly posting himself on the subject. There has been many false claims set up and many mistakes made by manufacturers who have already attempted to do this. The agricultural experiment stations and the agricultural papers are agitating this subject and educating the farmer as to the facts, and the manufacturer must keep in the same line or get left.

The Matter of Quality and Price.

Fourth—The price. This is where the manufacturer is liable to make a mistake. He thinks any old thing is good enough for agricultural lime, and may be foolish enough to use adulterations. In case he does this he will kill his trade and hurt the business for other manufacturers. We find that farmers and land owners are willing to pay a fair price if they can get what they want. We are maintaining a price of \$3.00 a ton, in bulk; \$3.50 in bags, and \$4.00 in barrels, in carloads f. o. b. our works, to dealers and agents, and we expect to have to increase this price in another year if fuel, labor and coopers still keep up to the present high standard.

THE SENECA WHITE LIME CO.

The Beachville (N. Y.) Lime Co. has been busy of late supplying limestone for the Ontario Beet Sugar Co., of Berlin, Ont.

The Granite State Lime, Cement and Building Material Co., Granite City, Ill., has been incorporated with a capital stock of \$20,000.00.

Charles G. Smith, of Clayton, Mass., has acquired the old Hadsell quarries at New Marlboro, Mass., and will engage in the lime business.

The Standard Lime and Stone Co. is installing a new stone crusher at Connellsville, Pa., to replace the one that was burned down some two or three months ago.

The Granite City Lime Co., Granite City, Ill., has been incorporated with a capital stock of \$20,000.00. The incorporators are: A. W. Morris, C. F. Wise and others.

The Ozark White Lime Co., Fayetteville, Ark., has been incorporated with a capital stock of \$100,000.00. W. L. Stuckey is president, and the directors are: W. C. Pricard, F. O. Guiley and E. A. Gullett.

Joseph James, Actinolite, Ontario, Canada, advises us that there is in their locality deposits of marble or crystallized limestone very suitable for producing a high-grade lime, and also every facility for working same; railways near, fuel, wood cheap and it is only 120 miles from Toronto.

The Rockland-Rockport Lime Co. announces that their general sales office is now located in Room 1210 Fuller Building, New York City, and they desire to call the attention of the trade also to the fact that they are now in a position to furnish their Eureka Prepared Pure Lime, cement, mortar, etc.

Reports from Natural Bridge, N. Y., state that the New York Lime Co. is making extensive preparations for the manufacture of lime at that place, and when present plans are completed they expect to turn out two cars of lime a day. They are erecting a large building for grinding and barreling, also for storing lime.

Fire, which was said to have originated from the explosion of a lime kiln, destroyed the lime works of E. A. Chatfield & Co., on West Boulevard, New Haven, Conn., early in November. This company was incorporated in 1890, and does a large business in the cement, plaster and tiles and pipes. The loss is estimated at \$20,000.00.

The Caledonia Lime and Marl Co. has been incorporated at Caledonia, N. Y., with a capital stock of \$60,000.00. The incorporators are: J. C. Tennent, Charles Menzie, J. M. Matteson, Alex. E. Menzie, Charles H. Root, C. E. Deichman, Delancey A. Cameron, S. W. McDonald and M. J. Hollinger. A. E. Menzie is attorney for the company.

General T. T. Dill has been appointed receiver for the firm of Dill & Dille. Dill & Dille are well-known dealers in coal, coke, lime and cement, also building material at Mansfield, Ohio. The appointment of receiver is simply for the purpose of winding up the partnership business.

SAND.

The Detweiler Sand Co. has been incorporated at York, Pa., with a capital stock of \$30,000.00. The company is composed of M. G. Colline, manager, of the York Silk Co., who is the president; H. L. Detweiler, of Columbia, vice president, and C. C. Emig, also of York, secretary-treasurer.

Wm. Tunnock has opened up gravel pits at Outermont, Montreal, Can., and it is said a plant will be installed to cost \$3,000.00 to produce roof gravel, poultry grits, sand crushed stone, etc.

The Garden City Sand Co., Chicago, Ill., has bought sixty acres of land on which it is said clay works will be established.

The Colorado Sand and Gravel Co., St. Louis Mo., has increased its capital stock from \$50,000.00 to \$150,000.00.

We have received from the Diamond Rock Sand Co., Millville, N. J., a booklet on the subject of filtration sands and gravels, which contains quite a lot of information on the subject of filtering water, and on the character of sand required. This company claims to have the only tract of silica lands in the United States comprising all sizes and of the highest per cent. of silica, and being an exclusive company making a specialty of filtration sand.

The Chickasha Gravel Co. is being incorporated at Chickasha, Indiana Territory, with a capital stock of \$60,000.00.



THE EFFECT OF A LARGE BLAST IN THE LIMESTONE QUARRY OF THE SENECA WHITE LIME CO.

Fertilizers.

ANNUAL MEETING.

The National Fertilizer Manufacturers' Association Met in Nashville, Tenn., November 11.

The ninth annual meeting of the National Fertilizer Manufacturers' Association was held at the Duncan Hotel, Nashville, Tenn., November 11. There were about forty-five or fifty delegates present from different parts of the country representing fertilizer manufacturers and not phosphate dealers, although some of the fertilizer manufacturers are producers of phosphates. The meeting was largely executive and was presided over by Mr. George Braden, of the Federal Chemical Co., Louisville, Ky., president. At the afternoon session Mr. Braden was re-elected president; C. H. McDowell, of the Armour Fertilizer Works, of Chicago, was elected vice president, and C. A. Alling was re-elected secretary-treasurer. This is the third term of Mr. Braden and Mr. Alling as president and treasurer respectively. The appointment of an Executive Committee was left to the president.

In the evening the attending delegates enjoyed an elaborate banquet at the Duncan Hotel, which was tendered to the visitors by the Nashville fertilizer men, and was arranged by Mr. W. D. Sadler, T. G. Tinsley and A. C. Reed. A number of impromptu speeches were made by members of the local committee and visiting delegates, President George Braden making the last speech of the evening, in which he expressed gratitude at the growth of the organization.

An invitation was extended to the delegates from operators in the phosphate fields of Mt. Pleasant, Tenn., to make a trip to that place, and a special coach was provided to take the visitors up. The trip was made November 12. The following report of this trip we quote from the Mt. Pleasant Chronicle:

"The visitors, accompanied by Nashville and Columbia parties, came in a special coach attached to the regular 10:30 train. A switch engine was attached to their coach, and, accompanied by the Mt. Pleasant party, they proceeded to the Howard Mines (now Virginia-Carolina) where they disembarked and walked over this property and also over the property of the Blue Grass Phosphate Co., where they were shown the mines in active operation.

"The special coach was then taken to the property of the National Acid Co., where a brief stop was made and an opportunity was given to the visitors to see the magnificent second crop of Irish potatoes, raised by Messrs. Alexander & Nichols. The car was then taken to the 'Arrow Mines' of the Charleston Mining and Manufacturing Co., where all disembarked, and after a walk over the property and through the plant, a most bountiful barbecue of shoat and lamb was served.

"All expressed themselves delighted with this feature of the trip, and there were none who did not do justice to the spread.

"After dinner the party was taken to the plant of the Central Phosphate Co., and was shown through its various departments by its courteous officers and employees.

"The next and last point visited was the plant of the Federal Chemical Co. (Tennessee Phosphate Co.), where the visitors were shown the detail workings of this most modern and excellent enterprise.

"The time for departure having arrived, the special car was taken back to the depot at Mt. Pleasant, where the local parties parted from their guests with many mutual expressions of pleasure and good will. The visiting delegates were as follows: J. W. Hegeler, LaSalle, Ill.; Samuel Peacock, Peru, Ill.; Wm. Prescott, Cleveland, Ohio; Wm. Shankland, St. Louis, Mo.; W. H. Baker, St. Louis; Wm. D. C. Kessler, Pensacola, Fla.; H. H. Lippencott, Philadelphia, Pa.; J. H. D. Rodier, Cleveland, Ohio; A. Conrad Jones, Philadelphia,

Pa.; J. H. Schmaltz, Chicago, Ill.; C. A. Alling, Chicago, Ill.; W. T. Wuitchet, Dayton, Ohio; C. H. Dempwiler, York, Pa.; J. H. Lang, Savannah, Ga.; Emory J. Smith, Columbus, Ohio; F. G. Brown, Anderson, S. C.; Jas. R. Sheldon, Savannah, Ga.; George Braden, Louisville, Ky.; G. W. McCarty, Atlanta, Ga.; G. N. Stebbens, Aurora, Ind.; Fred Meyer, St. Louis, Mo.; W. F. Weyerbacher, Booneville, Ind.; C. McDowell, Chicago; A. H. Pettit, Chicago; Geo. J. Schaal, Erie, Pa.; John G. Krug, Baltimore, Md.; Wm. S. Meyers, New York. With the party were also Messrs. Alph. Cajot, president; Emile Van Espen, vice president, of the Central Phosphate Co., both of whom arrived Wednesday from Paris, France.

"While in the city Mr. E. L. Gregory, our local phosphate broker, presented each of the guests with a card bearing the following information: Phosphate production of Mt. Pleasant field in 1899, total, 396,569 tons; 1900, domestic, 235,331 tons; export, 124,299 tons; total, 359,630 tons; 1901, domestic, 222,410 tons; export, 124,605 tons; total, 347,015 tons; 1902 (eight months), domestic, 161,593 tons; export, 66,422 tons; total, 229,115 tons. Present companies operating in this field: Federal Chemical Co., International Phosphate Co., Central Phosphate Co., Charleston Mining and Manufacturing Co., Columbian Phosphate Co., Blue Grass Phosphate Co., Petrified Bone Mining Co., Craik & Rhea, H. F. Alexander & Co., S. S. Lord & Co., W. V. Wilson. Brokers, Ruhm Bros., E. L. Gregory."

Phosphate Competition Abroad.

Consul Kehl seems to be of the opinion that sharp competition is threatening American phosphates in Germany. Writing from Stettin, Germany, under recent date to the Department, he has the following to say on the subject: "It is possible that Florida phosphate will meet a serious competitor in the recently discovered deposits on Ocean Island, Northeast of the Solomon Islands, which seem to be superior in quality to either Florida or Christmas Island phosphate. The following analysis was furnished me by the director of the largest local chemical works and importers of the American rock:

Description	Florida	Christmas	Ocean
	Per Cent.	Per Cent.	Per Cent.
Tribasic phosphate of Lime	76.95	83.08	86.15
Oxide of iron and alumina.	2.2	1.83	.68

"Local statistics for the year 1901 show an importation into Stettin of 101,156 tons of phosphate, of which 70,341 tons were from the United States.

"The time required in making the passage from Christmas or Ocean Island to Stettin is fifty-five to sixty days, while from Florida it is twenty to twenty-two days, depending upon the speed of the steamer. The difference in freight rates is said to be about 9s. 6d. (\$2.30) per ton."

The Alachua Warehouse Co., Alachua, Fla., will build a fertilizer plant.

The Oil and Fertilizer Co., Prattville, Ala., has installed machinery for manufacturing oil and fertilizers from cottonseed.

The Hubbard Fertilizer Co., Baltimore, Md., will reconstruct its plant that recently burned, expending about \$100,000.00, for plant of about 1,000 tons capacity daily.

It is reported that the Armour Co. will erect a plant at Americus, Ga. The plant of the Virginia-Carolina Chemical Co., at that place, is nearing completion, and expects to begin operations about the first of December.

The Maury Phosphate Co. has been incorporated at Columbia, Tenn., to operate in Maury County, with a capital stock of \$25,000.00. The incorporators are: W. J. Whitthorne, John Ruhm, John Ruhm, Jr., H. D. Ruhm and W. C. Whitthorne.

The Beech River Phosphate Co. have recently opened up several nice faces of rock at their mines at Parsons, Tenn. Craik & Rhea, of Mt. Pleasant, Tenn., are handling the output, and are apparently very successful in introducing this new rock to the trade.

The Baltimore Fertilizer Co. has been incorporated at Baltimore, Md., with a capital stock of \$15,000.00 to manufacture fertilizers. The incorporators are: H. Scott Roop, Newton S. Watts and Christian Rodekurt, of Baltimore; E. Oliver Grimes, Jr., and William T. Wilson, of Westminster, Md.

Salt.

The Rittman Salt Co. has been incorporated with principal offices at 419 Market Street, Camden, N. J., to manufacture salt, etc., with a capital stock of \$500,000.00. The incorporators are: John A. MacPeak, Henry J. Kingsbury and Walter E. Wier.

The Colonial Salt Co., of New Jersey, has increased its capital stock from \$150,000.00 to \$250,000.00.

The San Pedro Salt Co. is one of the new salt institutions of California that has been at work quietly, and it seems to be making a success in manufacturing salt. They but recently formerly entered the trade with their product, and indications are that they will be quite a factor in the West Coast salt industry in the future.

The Federal authorities, through District Attorney Woodward and Judge Morrow, of San Francisco, Cal., have taken some whacks at the Federal Salt Co., declaring that company illegal and six other corporations and forty-four individuals making and dealing in salt on the West Coast. The only exceptions made in an injunction issued by them was the Imperial Salt Co. It is even hinted that the district attorney will institute criminal proceedings against the individuals of the salt concerns mentioned.

The Derrigo Salt and Soda Co. has been organized at Augusta, Me., with a capital stock of \$10,000.00 to conduct a general salt and soda business. The officers of the company are: Lewis A. Burleigh, of Augusta, president; I. L. Fairbanks, of Augusta, treasurer.

President W. S. Eddy, of the Michigan Salt Association is quoted in a Saginaw report as saying that the salt market is suffering from an overproduction, and that the only way to move the surplus stock accumulating on hand is to make a material reduction in prices as an inducement. This may be good logic, and we do not think that they would voluntarily reduce prices unless they think it good policy, but, ordinarily, it is a mistake to undertake to force the consumption of an article by reducing the price.

A report comes from Saginaw, Mich., that Andrew Johnson, of that city, whose patent salt lifters have been in use more than twenty years, is still experimenting for methods of producing salt more cheaply. He says he has made tests in Detroit and Port Huron of using cotton seed oil as a medium of conveying heat through the grainers. The boilers and pipes were filled with the oil and heat applied, and the results are very satisfactory, as the oil can be heated to a temperature of 400 degrees, while steam at high pressure is only 226. Mr. Johnson has applied for a patent on the appliances for using this process.

The Pine Mountain Mica and Asbestos Mining Co. has been organized at Indianapolis, Ind., with a capital stock of \$1,000,000.00. The stockholders include capitalists of Indianapolis, Crawfordsville, Terre Haute and Brazil, Ind. Among the Indianapolis stockholders are: M. B. Wilson, W. F. Churchman, Andrew Kramer, John Shaw, Daniel Leslie, E. B. Moore, Harry B. Smith, H. C. De-wenter and W. P. Meyer. Crawfordsville is represented by Charles M. Travis, George F. Carver, Dr. Thomas Griffith, S. C. Rowland and William G. White. D. V. Miller and E. M. Sparks, Terre Haute attorneys, and McRea & Brown, a business firm of Brazil, are in the list of incorporators. Willis Wright, formerly of Indianapolis, said to be the promoter of the company, has been two years in the Pine Mountain region, prospecting and securing options on mica and asbestos property in Georgia and North Carolina. It is said that the company has options of 4,000 acres of land in Georgia and North Carolina, and at present own 2,500 acres of land that contains eleven mica mines and two asbestos mines. It is said they will build mills in Pine Mountain, which will be operated by water power.

Monuments.

Pneumatic Tools and Gasoline Engines.

There is probably nothing in the line of mechanical progress which has been a greater boon to monument manufacturers, as well as other workers in stone, than compressed air and its application through special tools to the dressing and carving of stone. Still, we occasionally hear some men in the business complain against it, taking the stand that it means loss of skill in such work. Such men, however, are the exceptions, and are almost invariably ones who have never given compressed air a trial in their shops, while, on the other hand, there is hardly a week passes but what we hear of some man installing pneumatic tools and an air compressor—nor does the plea that the adoption of such methods is not conducive to skilled work hold good. We can readily grant the fact that such appliances tend to cut down the time required in apprenticeship before one is competent to pass as a full-fledged workman, for that is but in keeping with the spirit of the times, and especially the famous American spirit. The tendency to-day is to extend a large share of brain power and skill in devising machines and appliances which will enable the user to do intricate work without having to serve a long apprenticeship in acquiring skill for the work. This, however, does not mean or even indicate that the workmen must not use his brain and train his muscle, for, in fact, it gives him more time and opportunities to improve.

A companion piece to the pneumatic equipment is the gas or gasoline engine, and, fortunately, this erstwhile contrary and cranky machine has been greatly improved in the last few years, till it can now be used with a satisfactory degree of reliability. When the gasoline engine first came among us it seemed to have more contrariness in its make-up than the worst balky mule that ever humped a back, and it was a thing for the countryman, with only a vague idea of engine complications, to avoid; but that is all changed now, and a modern gasoline engine can generally be depended on to behave itself if given a fair show. This improvement, especially in the small engines, is largely due to the automobile industry, but the stone-working industry is getting some of the benefit, and that without riding in the automobiles, too. The average retail monument man, when he comes to the question of installing pneumatic tools, must have for such application some small motive power that will not be too expensive to operate, and these little gasoline engines just fill the bill.

It would be difficult to point out the many advantages of an equipment of this kind, for quite a lot depends on local conditions, and especially the convenience of buying finished work from wholesalers. One may get a general object lesson, though, from the problem of working granite and marble. The marble almost invariably costs the most to start with, and not infrequently costs in the rough three times as much as the rough granite, and yet, in working this up into monuments it is not unusual, particularly if the carving is done by hand, for granite that is finished from raw material that only costs one-third as much as marble to cost more than finished marble in the same work. In other words, there is a point where the difference in the cost of the raw material is evened up by the extra cost of working granite, because it is harder to work. Here is where the pneumatic tools come in, for they not only reduce the labor cost in working stone, but the greater the labor cost the greater the ratio of reduction, and thus the point where the cost of finished granite and marble come, even when there is a difference in the cost of the raw material, is moved up several notches on the scale of intricate workmanship.

A contract has been awarded to the Van Amringe Granite Co., Boston, Mass., for the Ohio soldiers, to be erected on Missionary Ridge, Tenn. The monument will be 80 feet high and weight 349 tons.

The Leitchfield (Ill.) Marble Co. has been erecting some nice monuments.

Metzer & McIntosh, Green Castle, Ind., suffered from fire during the month.

The Trigg Marble and Granite Works, Rockford, Ill., has installed pneumatic tools.

Bolster Bros., Ephrata, Pa., have been enlarging their plant and adding pneumatic tools, etc.

W. F. Wenrich, Oshkosh, Wis., has added pneumatic tools and machinery to his works.

The Cherryvale (Kan.) Marble Works contemplate opening a branch at Neodesha, Kan.

Mr. Roggensack, the marble man at Lansing, Iowa, has several nice monument contracts on hand.

The marble works of James Johnson, Salina, have been purchased by Stewart & Son, Abaline, Kan.

Sholz & Sons, Evansville, Randolph County, Ill., have been erecting some monuments at various points lately.

John Wagner, Streeter, Ill., has been enlarging his business, and the indications are he will continue to spread.

Messrs. Bates and Peterson have formed a partnership and gone into the monument business at Cambridge, Ill.

W. L. Parker, Owosso, Mich., has a contract for a soldiers' monument of Barre and Missouri granite to cost \$1,000.00.

T. L. Evans' Sons, Danville, Pa., have been executing some granite work in the local cemetery during the last month.

The Philadelphia (Pa.) Press is heading a movement to erect a tablet to the memory of Dr. Daniel E. Hughes, of Philadelphia.

Frank Teich, San Antonio, Texas, has secured contract to erect monument at Houston for the Dick Dowling Monument Association.

The Smith Monument Works, Norwalk, Ohio, has recently completed and placed some very fine monuments in the cemetery at that place.

The George W. Clark Co., Jacksonville, Fla., advise us that they are shipping monument works to every city in the Union and enjoying good trade.

The Zeran Marble and Granite Works, Cairo, Ill., have added considerable machinery to their plant, including gasoline engines and polishing machines.

The Alderman Granite Works, Norfolk, Neb., have been bought out by McCann & Humphrey, Bloomfield, Iowa, who will take charge the first of the year.

Doran & O'Connor is the title of a new firm that will establish a new monument business at Iowa and 13th Streets, Dubuque, Iowa, on or before January 1.

The monument business of W. H. Cash, New Lisbon, Wis., has been purchased by Affeldt Armstrong & Co., and the new firm has moved to Portage, Wis.

The Clark Marble Works, Ionia, Mich., is now conducted under the firm name of Clark & Weeks, Mr. Weeks having purchased an interest in the business.

Watson, Huckel & Co., architects, Philadelphia, Pa., are drawing plans for a monument to be erected on the grounds of Muhlenberg College, South Bethlehem, Pa.

The Huntsville (Ala.) Chapter of the Daughters of the Confederacy have about completed raising funds for the erection of a monument to the Confederate soldiers of North Alabama.

A new concern in the monument fields is the Belding Monument Works, of Belding, Mich. The concern being the partnership of C. W. Weeks, of Alma, Mich., and W. J. Clark, of Belding.

Peter & Melcher, Louisville, Ky., have among other contracts on hand, a job to erect an elaborate monument in Cave Hill Cemetery of dark Barre granite 9½x9½ feet base and 30 feet high with raised carvings.

The Iowa Vicksburg Park Commission is preparing to build a monument in the Vicksburg National Park for Iowa soldiers; \$150,000.00 was appropriated by the State. Captain J. I. Merry, Dubuque, Iowa, is chairman.

The Kosciusko Monument Association will meet at Milwaukee December 4, to select a design for a monument to the polished warrior which is to be erected at Kosciusko Park. The association will pay \$13,000.00 for a monument.

We have received from the Alamogordo Marble Works, Frank Falcone, proprietor, Alamogordo, New Mexico, a sample block of marble which is an unusual color, for this part of the country, at least. In fact, it would be very difficult to describe the color. We might call it drab, but that does not give a very clear idea of the peculiar shade of this marble. We showed a sample of it to some of our local monument men, who say that the nearest approach they have seen to it in color is a gray marble of Tennessee. We judge from its appearance that the marble is not only novel in color, but is very hard and durable.

F. G. CUMMINGS.

F. G. Cummings, Haverhill, Mass., is dead. He was engaged in the granite and monumental business at that place and was prominently connected with a number of fraternal organizations.

GEORGE LAMSON.

George Lamson, of Wells, Lamson & Co., Barre, Vt., died October 28, 1902, after an illness of nearly two months. Mr. Lamson was one of Barre's most highly esteemed business men and citizens. He was born in Brookfield, Vt., in 1855. After leaving school, he entered the employ of the Wetmore & Morse Granite Co., and continued with this firm until 1882, when he and James K. Pirie formed a partnership and opened a quarry. The following year he bought the stone cutting business of E. L. Smith and joining forces with S. O. Wells formed the stone firm of Wells, Lamson & Co. It is said he was the first stoneworker in that section to use power traveling cranes in connection with a granite plant. Mr. Lamson was a very modest man and has always refused to accept political honors or public offices of any kind, though he had often been asked to accept them. He was president of the Quarry Owners' Association, and past president of the Granite Manufacturers' Association, of that place, and was also interested in other associated movements. At the funeral, which was largely attended, there were many elegant floral offerings, among which were special designs by the different associations in which he was interested, and employees and others connected with the granite business.

SLATE.

The Valley Hard Vein Slate Co., Carbondale, Pa., has been incorporated with a capital stock of \$25,000.00.

The H. H. Mathews Slate Co., Poultney, N. Y., has purchased another quarry and is extending its operations.

Norton Bros., Granville, N. Y., are reported to have purchased valuable slate near there, which they will likely develop.

The Carbon Slate Co., of Slatington, Pa., has been incorporated with a capital stock of \$45,000.00. The incorporators are: Ellis Owens, Robert G. Pierce and Joseph Richards.

The National Slate Mining Co., with principal offices at Danielsville, Northampton County, Pa., has been incorporated for the purpose of mining, quarrying and selling slate of every kind and description, with a capital stock of \$50,000.00. M. A. Lobb, Bangor, Pa., and others are interested.

At the annual meeting of the stockholders of the Capital Slate Co., Montpelier, Vt., the following officers were elected for the year: President, J. G. Brown; vice president, D. F. Clark; finance committee, J. G. Brown, James F. Cross and Peter Badord; secretary-treasurer, H. A. Dubuc. The showing made during the first year's business was very encouraging and it was voted to increase the capital stock to \$15,000.00 in order to further develop and work the quarries on a larger scale.

Mr. W. E. Hough, Fairmount, W. Va., writes us that we were in error in stating in Rock Products for November that he is organizing a company to develop a quarry near Fairmount. He is one of a company of five who own 70 acres and have leases on 100 acres more in Berkeley County, W. Va., three miles from Martinsburg. He states that they have the best prospects for slate in the United States, and that the Lovett Slate Co. is developing quarries now and will be ready to split slate by December 1. He and his associates are awaiting the outcome of the developing of the Lovett Slate Co., which has a fine showing, before undertaking the development of their own property. The others associated with him are: C. J. Heinz, H. C. Jones, Ed. Shamline, E. R. Lines and Lawrence E. Sands, cashier of Exchange Bank of Wheeling, W. Va. Lawrence E. Sands is president of the company.

Stone.

The William Penn Cut Stone Co., on Tower Bay Slip, Superior, Wis., is very busy these days.

The Cherokee Marble Works, Canton, Ga., are erecting an addition to their plant at that place.

The American Black Marble Co., Lewiston, Me., has increased its capital stock from \$300,000.00 to \$500,000.00.

The Guilford Granite Quarrying Co. has been incorporated at Baltimore, Md., with a capital stock of \$20,000.00.

It is reported that Saal & Brookings, of Pekin, Ill., contemplate organizing a company to manufacture artificial stone.

Naylor Bros. have leased the property of the G. H. Cutting Granite Co., at Peekskill, N. Y., and will operate at that place.

It is reported that W. B. Hughes & Co., Fort Worth, Tex., will remove to Oklahoma City, Okla., where they will erect a modern stone plant.

C. C. Wyatt, of Faith, N. C., operating for capitalists of Salisbury, N. C., will open up granite quarries by a special process of his own.

The Topeka Hydraulic Stone Co., Topeka, Kan., contemplate erecting a plant on property at the foot of Madison Street on the Kaw River. This is to be a permanent structure.

The Erie Stone Co., Buffalo, N. Y., has been incorporated with a capital stock of \$40,000.00. The incorporators are: W. R. Thomas, E. M. Sheldon and L. D. Wood, of Buffalo.

Blatz & Krieb Stone Co., Louisville, Ky., has recently added to its equipments an up-to-date stone planer built by the New Albany (Ind.) Manufacturing Co., New Albany, Ind.

The Interstate Stone Co. has been incorporated at Spencer, Ind., with a capital stock of \$10,000.00. The directors of the company are: William S. Mead, J. W. Richardson and John A. Sloan.

The Eastern Crushed Stone Co. has been incorporated at Augusta, Me., with a capital stock of \$50,000.00. The officers are: L. A. Burleigh, president; J. Berry, treasurer; both of Augusta, Me.

The Joplin (Mo.) White Lime and Cement Co. has been incorporated under the name of the Myers Stone Co. They are operating stone quarries there night and day, having them lighted up with electricity.

The Concrete Stone Co. has been incorporated at Watertown, Ia., with a capital stock of \$30,000.00. The incorporators are: C. P. Bratnober, George F. Dunham, Geo. L. Dixon, H. M. Reed, D. L. Wood and W. M. Stewart.

It is reported that E. S. Crawford, Columbus, Ohio, recently closed a \$1,000,000.00 deal in marble property near Friendsville, Tenn. A company of Eastern and Northern capitalists are said to be interested in the deal.

The Sweeney Bluestone Co. has been incorporated at New York City with a capital stock of \$100,000.00. The incorporators are: P. B. Sweeney and R. C. Wooster, of New York City, and P. C. Grening, of Brooklyn, N. Y.

The Emerson-Troy Granite Co., 788 Broad Street, Newark, N. J., has been incorporated with a capital stock of \$100,000.00 to quarry stone. The incorporators are: Edward M. Waldron, Harry Campton, Michael T. Barrett.

The American Quarries Co. has a new stone mill in operation at Stonington, Ind., which was equipped with a full line of up-to-date stone machinery made by the New Albany (Ind.) Manufacturing Co.

Messrs. Quinlan & Robertson, of Crookstown, Ont., Can., have secured contract to furnish \$300,000.00 worth of stone for the Dominion Government. They also have a number of bridge and dam contracts.

The Great Western Marble and Onyx Co., Spokane, Wash., has secured a contract to furnish white onyx for finishing the Lumberman's Exchange Building at Spokane.

J. J. Cuddthy Stone Co., 15 Exchange Place, Jersey City, N. J., has been incorporated with a capital stock of \$75,000.00, to quarry stone, by Francis A. Cuddthy, Patrick O. Loughlin and John E. Swift.

The A. A. Clark Stone Co., Elizabeth, Pa., has been incorporated with a capital stock of \$10,000.00 to deal in all kinds of stone. The incorporators are: Abram L. Clark, F. M. Kingsbury and F. C. Johnson.

The Eisenstadt Slate Co. has been incorporated at Brooklyn, N. Y., with a capital stock of \$10,000.00. The incorporators are: H. O. Eisenstadt and Samuel Thomas, of Brooklyn, and Charles Brown, Jersey City, N. J.

The Keystone Graphite Co. has been organized to develop graphite mines at Glenville, Canada. The company is said to be headed by W. J. Byrne, of Carbondale, Pa., and there is also a report that it will take over a number of concerns that are already in the graphite field.

The Woodbury Granite Co., Hardwick, Vt., completed its contract to supply granite for the Lakeshore Terminal in Chicago early in November. They were at work on the contract about nine months and the total amount involved was \$190,000.00.

The Ste. Genevieve Lime and Quarry Co. has been organized at Ste. Genevieve, Mo., with a capital stock of \$100,000.00. The organizers are: Philip M. Huecke, Philip Kolb, Aikman Welch, George A. Held, John L. Bogy, F. L. Barada, James R. Waddill.

The Toledo Stone and Glass Sand Co., Toledo, Ohio, has been incorporated by Thomas H. Tracy, Frank H. Geer, William B. Duck, Louis Bartlett and Edward Williams, Jr. Capital stock, \$100,000.00. This company will operate stone, glass sand and other mineral quarries.

The Joseph B. Reinhalter Co. has been incorporated, with principal offices in the New Jersey Corporation Guarantee and Trust Co. Building, Camden, N. J., to deal in stone, quarries, etc., with a capital stock of \$100,000.00. The incorporators are: Joseph B. Reinhalter, Howard L. Keyser and George F. Otto.

The stone workers of Mutch & Calder, at Barre, Vt., was visited by safe blowers during the month. They attempted to blow open the safe, but it appeared that they were frightened away before succeeding. They rifled the desks in the office, but unfortunately did not seem to have secured anything of much importance.

The granite firm of Charles H. More & Co., Montpelier, Vt., with quarries at Barre, Vt., has been incorporated with a capital stock of \$200,000.00. The incorporators are: Charles H. More, president and general manager; W. E. Adams, vice president and treasurer; C. A. Gale, secretary. The directors are: Charles H. More, W. E. Adams, F. A. Dwinell.

The Vermont Marble Co., of Rutland, Vt., has secured a contract for furnishing marble for the interior of the First National Bank Building, Chicago, Ill. This is one of the largest contracts the company has ever taken. It requires something like 300,000 cubic feet of marble. The company has also a number of other important contracts for marble.

The Steinbach Marble Co., New Brunswick, N. J., has been incorporated with a capital stock of \$25,000.00. The incorporators are: George C. Brunswick, New Brunswick, N. J.; Louis Dutoit, 507 E. Eighty-eighth Street, New York City; James Blew, 230 West 129th Street, New York City; H. Paul Leonard, New York City, and Frank J. Aswald, Rutherford, N. J.

The Michigan Manufacturers' Mining and Railway Co. has been organized at Detroit, Mich., with a capital stock of \$1,500,000.00. It is said the company will take over the property of the Michigan Stone Supply Co., at Schofield, and has acquired considerable other quarry property which will be developed. Among those interested in the company are the following: William C. McMillan, Truman H. Newberry, Don M. Dickinson, Russell A. Alger, United States Senator; Samuel Hunt, president of the Detroit Southern Railroad; Cameron Currie, banker and broker; Thomas F. Smith, and John T. Shaw, vice president First National Bank.

Quarries.

M. B. Smith & Son are developing stone quarries at High Point, S. C.

J. Erickson, Florence, Colo., has opened up a quarry near Pueblo, Colo.

McGlashon Bros. are opening up a limestone quarry near Frankfort Station, Ill.

The Rock Island Railway Co. will open stone quarries near Wewoka, Indian Territory.

The quarry of M. G. Ryan, of Stonington, Me., will not be able to operate during the winter.

Fred. G. Plantz, Pittsfield, Mass., has purchased a stone quarry and is planning to begin operations.

The Port Angeles Sandstone Co. has been incorporated at Seattle, Wash., with a capital stock of \$1,000,000.00.

Charles Moore has a granite quarry near Hiawatha, Kan., which produces what is known as bronze-green granite.

Work is to begin soon in the quarry of John A. Foster, near Rob Roy, Ind., where quite a lot of machinery is being installed.

The Pacific Coast Marble and Tile Manufacturing Co. has been organized at Spokane, Wash., with a capital stock of \$1,000,000.00.

The Cannon Hill Quarry Co. is quarrying stone and putting in a crusher at Frederick, Md., to furnish ballast for the B. & O. Railway.

Henry E. Hardison and M. A. Goodwin are opening up a new quarry at West Franklin, Me., where they will get out paving blocks during the season.

The Western Lithograph Co., Wichita, Kan., has bought land in Baxter County, Ark., containing lithograph stone, and it is said they will open up a quarry.

A. S. Littlefield recently bought out at auction the quarry at South Thomaston, Me., formerly operated by the Standard Quarrying and Construction Co.

It is reported that a \$600,000.00 company will be incorporated to operate marble quarries at Friendsville, Tenn., by E. S. Crawford, of Columbus, Ohio, and others.

The Imperial quarry, which has been idle for several years at Wind Gap, Pa., has been leased by William Harding & Co., of Pen Argyl, Pa., and will be put in operation.

The Delaware Valley Quarry and Construction Co., Lambertville, N. J., has an extensive contract for furnishing crushed stone to the Lehigh and New England Railway Co.

The Graef & Nebel Quarry, Sturgeon Bay, Wis., has been busy of late on orders for Leatham S. Smith for material to be delivered at Escanaba for the Northwestern Railway Co.

The Lake Shore Stone Co., Milwaukee, Wis., has increased its capital stock of \$250,000.00 to \$450,000.00. The president of the company is Fred. Vogel, and Charles Quarries is secretary.

The Carthage Sand Machine Works has been incorporated at Carthage, Mo., to manufacture sand machines for quarry use. The secretary of the company is Curtis Wright.

F. A. Haines and N. W. Chapman, of Deadwood, S. D., have purchased the interest of John L. Burke, of Hot Springs, S. D., in the Burke stone quarry, and they expect to operate it extensively this year.

The Pueblo Stone Co. recently opened up a new quarry about eighteen miles Northwest of Colorado Springs, Colo., and is getting out a hard sandstone which is said to be 98 per cent. silica and almost pure white.

Messrs. Arthur Hall & Thomas T. Brunton, with offices at 327 Kittredge Building, Denver, Colo., operate quarries in red sandstone, which supplies a lot of the finest building stone of Denver, as well as other points in the West.

The Herrick property at Dalton, Mass., of Ensign M. Smith, consisting of forty acres, has been bought by John Dwyre. This property contains a bluestone quarry which will be opened up at once by Mr. Dwyre.

The Jefferson Quarry Co., of Millville, Jefferson County, W. Va., has been incorporated with a capital stock of \$100,000.00, to deal in all kinds of building stone. The incorporators are: Charles Becker and others of Baltimore, Md.

James Calhan, superintendent of the George Doyle & Co. quarries at Bedford, Ind., informs us that the quarries in and around Bedford, Ind., have had a good business this season, and at present all are making ready for next year's work.

Mr. Edward M. Waldron, who is a contractor for the new city hall at Newark, N. J., has organized a company to take over and carry on the business of Walter E. Emmerson & Co., of New Hampshire, to be sure of a supply of stone for the work at hand.

Charles Pratt has reopened his stone quarry at Jonah, Rocks, across the river from Essex, Conn., which has been shut down for a couple of years. He has received a contract from the Government for stone that will keep the quarry busy all the winter and possibly all summer.

George Greene, of South Thomastown, Me., who is one of the owners of what is known as the High Island Quarry, was consulted recently by Philadelphia parties, it is said, who are seeking the permission to quarry stone for the new Pennsylvania capitol at Harrisburg, Pa.

D. Sinclair, Kankakee, Ill., has purchased the Rocky Ridge rock quarry near Concord, and intends to operate a large ballast quarry. Mr. Sinclair is said to be one of the largest concrete contractors in Illinois, and already operates a \$200,000.00 ballast quarry in that State.

Reports from Hiddenite, N. C., state that a granite quarry will be opened up and operated by N. B. McCanness, D. R. Julian, J. S. McCubbins, C. L. Welch, P. H. Thompson, M. L. Bean and Richard Eames, Jr., all of Salisbury, N. C., who have purchased 500 acres of granite land. They expect to incorporate a \$25,000.00 company.

The Montana Mining and Marble Co., Helena, Mont., have put men to work on the marble quarry owned by them just a few miles from Helena to do some preliminary developing in order that marble may be taken out in large quantities. Mr. M. H. Baldwin, treasurer of the company, states that the company will increase the number of men as soon as possible, put in new machinery and have the deposit worked as rapidly as possible.

Aberdeen Granite Company.

The Aberdeen (Wis.) Granite Co. has succeeded in interest to the former Aberdeen Marble and Granite Works; also to the Light Granite Co. and the Ortonville Granite Co., of Ortonville, Minn. The company takes the quarry and assets of the above named corporations, and in addition, has bought the noted Baxter quarry at Ortonville, Minn., from which the splendid five million dollar Minneapolis court house was built. The Baxter purchase includes buildings, machinery of every kind and a spur track from the Chicago, Milwaukee & St. Paul Railway; also some 7,000 or 8,000 carloads of fine building granite, already quarried. The acquisition of the Baxter property, they say, enables the company to add two additional grades of monumental granite, of which it has had before but a limited supply. In addition to the fine-grained deep-red granite, its choicest product, it can now supply a dark red and a variegated.

The company, of course, will be in position to supply building rock, window sills and caps, steps, coping, paving blocks, curbing, etc.; in fact, anything made of such stone.

The capital stock of the concern has been fixed at \$50,000.00, of which \$40,000.00 has been paid in. Messrs. J. Lee Koon and Jefferson B. Koon, who have been the proprietors for about a year past, remain identified with the company as general manager and director, respectively. The other directors and stockholders of the company are prominent business people of Aberdeen.

The expansion of the business made desirable the increased capital and facilities for handling the trade. A minimum \$20,000.00 order has been booked for delivery, extending through the year; also other good contracts, including a drinking fountain at Lincoln, Neb.

Some Novel Building Blocks.

A Wisconsin man, Elmer E. Van Wie, of Kenosha, Wis., is the inventor of a novelty in the building block line, which consists of terra cotta pipes, which are grooved or slit so as to fit together and make what is known as the continuous tube construction.

The invention was patented several years ago, and an industry was developed in the way of manufacturing wooden blocks of this kind for use by children as building blocks in building play houses, castles, etc. The use of the blocks for



ELMER E. VAN WIE.

working terra cotta is said to have been an afterthought with the inventor, and was suggested by the houses built by him to advertise his building blocks for children.

In reply to an inquiry in regard to the matter, Mr. Van Wie sends us the following on continuous tube construction:

"The tubes are made to interlock by having four slots, that allow each tube to intersect the adjoining tube. This manner of joining makes the wall very strong. For instance, terra cotta tubes 1 ft. long, 8½ in. in diameter and 5¼ in. stock—the size used in making silos 20 ft. in diameter—will

withstand a pressure of seven tons to the square foot. Three hundred and twenty-eight pounds is all the strain that is brought to bear by the silage when filled to the height of 28 ft.

"The fireproof system of building is this clay tube for making walls and partitions; and for floors, steel tubes in combination with concrete. This method of interlocking so distributes the metal in the artificial stone that fire can not so expand as to tear the concrete apart.

"Architect C. A. Dickhaut, of this city, says that he is convinced that these construction sections, to be used in all kinds of construction, are worthy the consideration of all interested in building material for the advancement of modern construction.

"Cement blocks are only four inches in length, and for many uses are superior to clay tubes.

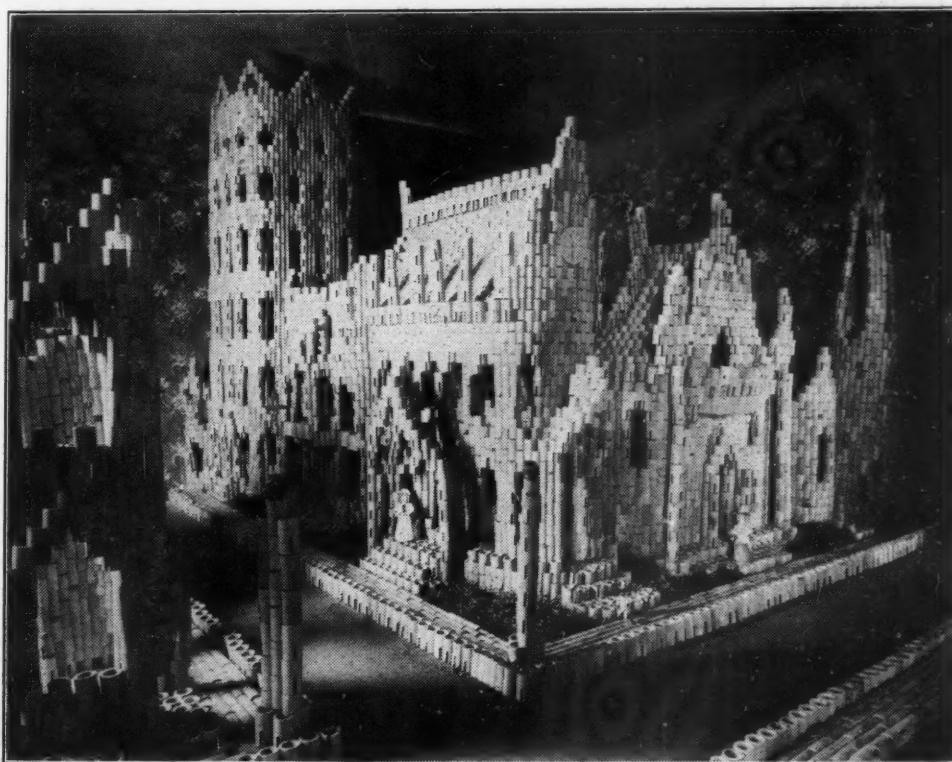
"For steel concrete these tubes are made of steel, and, in combination with concrete, is the ideal thing for floors, platforms, small bridges, and for sidewalks it gives great satisfaction and saves 50 per cent. in cost. There is a movement on foot to use the steel and concrete in road building, as some prominent builders believe the good roads problem is solved. Any kind of dirt can be capped or bridged over with this work at a small cost, as washouts can not affect this road, and it is practically everlasting. It will no doubt prove to be the ideal method of road building. A mile of this will soon be put in as a test.

"The possibilities of this interlocking system are almost unlimited. Too much can not be said for what has been done and what can be.

"Models will be furnished that will show this simple, yet wonderful, invention to any builder who is interested."

Tell Us What You Are Doing.

We have frequent inquiries for names of people in certain localities making certain lines of goods which makes it important for us to be well-informed on what the bulk of the people in the rock product lines make a specialty of. For example, we have an inquiry at this writing for a list of Tennessee quarrying companies who furnish marble work, not those who simply saw, but those who manufacture marble work complete for church altars, statuary, etc. Now, this matter is of even more importance to the readers of ROCK PRODUCTS in the lines inquired for than it is to us, and we wish all who read this, especially those referred to in the inquiry, would just take a moment off and write us a line stating just what they manufacture. By doing this they will not only be doing us a favor, but putting themselves in shape to get information that is worth something.



AN ILLUSTRATION IN CONTINUOUS TUBULAR CONSTRUCTION.

Clay.

National Meeting.

The seventh annual meeting of the National Brick Manufacturers' Association and the American Ceramic Society will be held at the Brunswick Hotel, Boston, Mass., February 2 and 14, 1903.

The National Furnace Brick Works.

Up at the little town of Rogers, Ohio, which is about fifty miles from Pittsburg, Pa., is a company manufacturing a high-grade of silica firebrick, which they say will stand up under a very great fire.

The concern operating here is the National Furnace Brick Co., of which John W. Hall, East Liverpool, Ohio, is president, and H. W. Weaver, manager. The main offices of the company are in Potter's National Bank Building, East Liverpool, Ohio, but the works and branch office are located at Rogers. The works are located on a site which comprises about eight acres of fine clay land. In fact, it is said that it is as fine a clay as is very often found in those parts, which is saying a great deal, for some of the largest and finest brick works of the world are located in the Ohio Valley, which is only eighteen or twenty miles from Rogers. The mine from which the company is getting its clay is about 100 feet in depth at the present time. It has been well taken care of, the company thoroughly walling and bracing it as they mine deeper. Tracks extend to the innermost parts of the tunnel, and the clay trucks are run from the inner parts of the mine to the tippie, where the clay is dumped into the bins below.

The clay is of a silica nature and is from ten to fifteen feet in depth, and covers an area of about forty-five or fifty acres, of which the company owns the entire clay rights. The company uses almost all its own clay, except very small portions of special clays, which are shipped in from the Mount Savage regions.

The buildings of the works are nearly all built of wood, which are, however, stout and substantial. The works is two two story in height with the exception of the dry floor, which is, however, only one. The Follow system of drying is used, and the company reports extremely satisfactory results from its use. The dry floor covers a space of twenty-five feet in width by seventy-five in length.

In manufacturing brick they operate a 9-foot dry pan, and the brick is molded by hand. From the dry pan the clay is elevated to the second story, where it is pugged in a 10-foot open-top pug mill, and the clay is allowed to fall down a chute to the floor below, where it is weathered or aged over night, and it is used the following day. The brick is redressed in a hand repressor after molding, and they are then placed on the drying floor, where they are allowed to remain for about twelve hours, after which they are ready for setting in the kilns.

The power for the entire plant is furnished by a 125 h. p. Skinner engine.

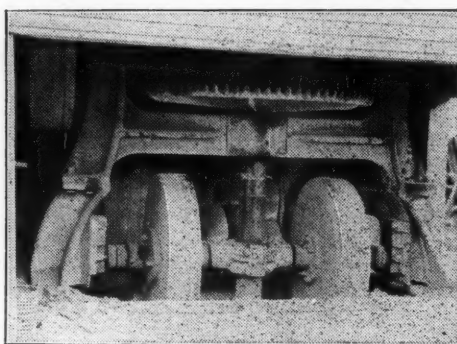
The dry floor occupies a space of 110 ft. by 75 ft., and the engine room, dry-pan room, clay cellar and boiler rooms a space of 55 ft. by 50 ft. The company has two large stockhouses, 20 ft. by 20 ft., and two large clay sheds, about 20 ft. by 20 ft. They have a railroad siding on each side, the one in front bringing in what raw material is needed, and the one in the rear taking care of the finished product of the works.

In addition to their own clay property, the company has clay rights on a good many acres surrounding, and they also have another advantage in owning their own coal mines, which enables them to furnish their own fuel, and also to supply coal to almost every one in the town.

They are at present operating eight kilns, and the capacity of the plant will be increased as fast as the business will warrant. It is said that as they have all the business they can take care of at the present time, there are some prospects that they will enlarge their capacity, at least four kilns next year. The mechanical equipment of the plant was furnished by the Patterson Foundry and Machine Co., East Liverpool, Ohio.

Earthenware Conditions in Germany.

A report from Germany states that the German manufacturers of earthenware contemplates a consolidation, at least as far as selling the ware is concerned. Business has been unsatisfactory the past few years, owing to competition reducing the price, in some instances to less than below cost. The only concerns that have not felt this competition are said to have been those making a strictly high-grade ware, and who are able to maintain their prices, regardless of what the general prices might be. It is said also that a former effort to combine the interests some years ago did not prove effective. The reason given is that a number of independent companies sprung up and underbid those who were associated together, until the result was a general war of prices, which eventually put a number of concerns in the hands of receivers. Some retired from the business, while others are said to be still operating at a loss. With such a condition, it is small wonder that they are seeking to form an association, or combination to relieve the situation somewhat. The only precaution necessary, if the association can be made unanimous, is to not raise the prices to such a point as to tempt independent works. In



A NINE FOOT DRY-PAN.

other words, if they only seek to derive a reasonable profit, there is a good chance of success, and evidently this point has already been properly impressed on the minds of the trade over there.

The Valley City Brick Co. has been organized at Grand Rapids, Mich., and is to take over the property of the Collins Brick Co. The officers of the company are: H. D. Brown, president; McGeorge Bundy, secretary, and Clay H. Hollister, treasurer.

Mr. E. W. Church, Clifton Forge, Va., and DeWitt Steel, of Covington, Va., will develop clay and limestone lands at Covington, Va., and will probably build brick and lime works.

HERE AND THERE IN THE CLAY FIELD.

E. T. Lewis & Co. will establish brick works at Nashville, Tenn.

Messrs. Simon Botts & Striekert are equipping a new brick plant at Brenham, Tex.

Reports from Des Moines, Ia., state that J. E. Chamberlain will put in a brick plant at Harvey.

It is reported that the Detroit Brick and Tile Co., which was incorporated a year ago with a capital stock of \$75,000.00, at Detroit, Mich., has made an assignment.

The Cooper Brick Yard, near Akron, Ohio, was destroyed by fire November 10. Loss is estimated at \$10,000.00.

It is reported that Jay Brotherton, of Memphis, Tenn., is interested in a project to manufacture clay shingles.

The Southwestern Brick and Tile Co. has been incorporated at Lake Charles, La., with a capital stock of \$25,000.00.

The Eureka Tile Works, Bucyrus, Ohio, was destroyed by fire early in November. The loss is estimated at \$5,000.00.

The plant of the Massillon (Ohio) Stone and Fire Brick Manufacturing Co., was destroyed by fire November 16. Loss, \$50,000.00.

The Illinois Brick Co., of Chicago, Ill., has declared a full dividend of 6 per cent. on the preferred stock and have orders ahead for about 70,000,000 bricks.

Reports from Lebanon, Ind., state that the brick and tile factory of John S. Weldon has been totally destroyed by fire. Loss is estimated at \$3,500.00 with no insurance.

It is reported that The Southern Brick Co., of New Orleans, La., has secured option on a site at Lake Charles and expect to erect a \$25,000.00 brickmaking plant.

The Biloxi Brick Co. has been incorporated at Biloxi, Miss., with a capital stock of \$50,000.00. The incorporators are: W. K. M. Lukate, L. Lopez, Jr., John Carraway and others.

The Great Eastern Clay Manufacturing Co., of South River, N. J., has been incorporated by R. M. Syee, J. A. Green, B. S. Barnard, W. A. Snow and T. J. Taber with a capital stock of \$1,000,000.00.

The Minnesota Clay Co., with a capital stock of \$300,000.00 and general offices at St. Paul, Minn., has started up a brick yard at Coon Creek Junction, in Anoka County, Minn. The plant at present is turning out 100,000 a day.

Reports state that Lancaster, Ohio, is to have a new pottery and work will be commenced as soon as possible. James McMahon and L. T. Jack, of Zanesville, Ohio, will incorporate the company. It is to have a capital stock of \$10,000.00.



A PARTIAL VIEW OF THE WORKS OF THE NATIONAL FURNACE BRICK CO.

The Brick and Tile Co., Britt, Iowa, has recently enlarged its plant by additional kilns.

The Monticello Brick Co. has been making a large addition to its plant at Reading, Pa.

The McDonald Tile Works at Tiro, Ohio, was destroyed by fire November 8. Loss, \$10,000.00.

O'Brien Bros., who operate a sawmill at Merrill, Wis., have also begun the manufacture of bricks.

The Diana Brick and Manufacturing Co., of Beaumont, Texas, is preparing to erect a brick plant.

Edward Daehler, as receiver, is now in charge of the Buena Vista Freestone Works, Buena Vista, Ohio.

J. H. Hughes has moved from Decatur, Ind., to Bluffton, Ind., where he is opening up a marble shop.

W. H. Pitt, of Florala, Ala., will establish brick works at that place. The machinery has been purchased.

The Baring Dark Granite Co., Calais, Me., contemplates building a stone mill next spring to work granite.

H. H. Dickey, Cumberland, Md., contemplates organizing a company and establishing a brick plant at that place.

Reports from Whiteville, N. C., state that Oscar Hugh is to establish a brick plant with 1,000 to 15,000 daily capacity.

T. L. Lowrie, Alba, Tex., contemplates establishing a brick plant at that place. He has purchased the machinery for same.

The St. Louis Vitrified and Fire Brick Co., St. Louis, Mo., has increased its capital stock from \$100,000.00 to \$135,000.00.

The Charles Wege Marble and Tile Co. has purchased a site and will erect a tile factory to cost \$5,000.00 at Columbus, Ohio.

The Mayfield Brick Works, Mayfield, Ky., has been incorporated with a capital stock of \$40,000.00 to manufacture brick.

The Harbison-Walker Refractory Co., Pittsburg, Pa., has increased its capital stock and will extend the sphere of its operations.

Reports from Victoria, Tex., state that the Victoria brick factory has resumed operations after being shut down for a year.

Colonel A. O. Jones, of St. Louis, Mo., is figuring on organizing a company to manufacture brick in the neighborhood of Dennison, Tex.

It is said that the Newbern Press Brick Works, at Newbern, Ill., south of Jerseyville, is making extensive improvements at its plant.

The Cleveland Brick Co., Cleveland, Ohio, has been adding to its real estate holdings, and it is said that the company contemplates adding to its facilities.

The Onondaga Litholite Co. is building a house out of litholite for a resident of Syracuse, N. Y., and it is said the walls have all the appearance of limestone.

The Peabody Enameled Brick, Tile and Fireproofing Co., of New York City, has been incorporated at Dover, Del., with a capital stock of \$5,000,000.00.

Mr. W. A. Buckner, of Sumter, S. C., contemplates organizing a company to develop kaolin beds near Columbia, S. C., and will build a manufacturing plant.

The marble and mantel firm of Babcock & Fey, Hornellsville, N. Y., has dissolved partnership. Mr. Babcock is going to Buffalo and Mr. Fey will continue the business.

Reports from Dover, N. H., state that The Fiske Brick Co. are preparing to enlarge its new plant at Dover Point so as to increase their annual output to 20,000,000 bricks.

The Livingston Brick Co., at Livingston, Polk County, Tex., has been incorporated with a capital stock of \$4,000.00 by W. D. Willis, George T. Savage and S. M. Peters.

The Waverly Stone Co., Holland, Mich., has been crowded with orders during the past month, and, in fact, it is reported that they have had a greater demand than ever before.

The Ridley Park Brick Co., Chester, Pa., is constructing a new patent steam dryer in order that they may dry their product more rapidly. This consists of about 24,000 feet of piping.

The Standard Press Brick Co. has been incorporated at Lawton, Okla., with a capital stock of \$20,000.00 by W. M. Irwin, C. J. Aurell and A. E. and H. C. Hammonds to manufacture brick.

The Euclid Shale Brick Co., of Cleveland, Ohio, has been incorporated with a capital stock of \$50,000.00 by John E. Wheal, Henry Wheal, John J. Kelly, T. J. McManus and Thomas C. Willard.

The Fredericksburg Brick and Coal Co., Fredericksburg, Ohio, has been incorporated by George R. Warden, P. H. Gifford, E. A. Clark, D. E. Lowe and W. F. Greensdale. Capital stock, \$100,000.00.

McCurdy & Lawrence, of Pittsburg, Pa., have purchased 2,200 acres of kaolin land near Macon, Ga., for themselves and others and propose to develop same and erect a large manufacturing plant at that place.

The Rutland-Florence Marble Co., Florence, Vt., recently installed a traveling crane which it seems was too big for the building erected to contain it, which called for considerable work incident to installing it.

The Elmira Shale Brick Co., Horseheads, N. Y., has been incorporated with a capital stock of \$50,000.00 with the following directors: J. P. Weyer, Elmira; R. G. Eisenhart and H. C. Stowell, Horseheads.

The Barton Lumber and Brick Co. has been incorporated at Jonesboro, Ark., with a capital stock of \$40,000.00. The officers of the company are: P. C. Barton, president; Q. Y. Tatum, vice president; A. W. Hall, secretary-treasurer.

The Bloomville Brick, Tile and Manufacturing Co., has been incorporated at Bloomville, Ohio, with a capital stock of \$33,000.00. The incorporators are: August Honeck, A. H. Honeck, J. A. Klape, Jacob Geiger and Stephen A. Saul.

C. A. Conway, who formerly operated at New Philadelphia, Ohio, has moved to New Comers-town, where he will conduct and operate under the head of The Salem Fire Clay Co., and add the manufacture of roofing tile and sewer pipe.

Reports from Albany, N. Y., state that the Utica Pressed Brick Co. has been incorporated with a capital stock of \$500,000.00. The directors are: J. E. Hardman, Montreal, Canada; G. T. Willard, New York, and Alfred Putnam, Utica.

The Paragould Brick Co. has been incorporated at Paragould, Ark., with the following officers: R. C. Grizzard, president; J. R. Hafford, vice president; Charles Pratt, general manager; M. F. Collier, secretary, and H. W. Woolsey treasurer.

R. H. Cobb, of Anniston, Ala., and J. W. Comer, of Savannah, Ga., with several parties interested in the Anniston Lime and Stone Co., contemplate erecting a plant at New Orleans, La., for the manufacture of sand and lime bricks.

Reports from San Francisco, Cal., state that the Stockton Brick and Pottery Works is installing a plant about four miles from Tesla, for the manufacture of 25,000 fire brick and 50,000 pressed brick and tile a day. It will be in operation in a month or so.

The Walker Construction Co. has been incorporated at Clarksburg, W. Va., to manufacture and sell brick, build, operate, buy, lease and sell street railways, etc. The incorporators are: D. F. Walker, Fred. O'Brien and John McIsaacs, all of Fairmount, W. Va., and Frank Long and C. A. Hiland, both of Clarksburg.

The Southwestern Brick and Tile Manufacturing Co. has been incorporated at New Orleans, La., with a capital stock of \$25,000.00 to manufacture bricks, tiling and other clay products. The officers are: Samuel T. Bradley, president; F. C. Thiele, vice president; Leon A. Atzenhoffer, secretary, and Francis Bruseau, treasurer.

The Halifax Brick and Tile Co., Seabreeze, Fla., has been incorporated with a capital stock of \$25,000.00 with the following officers: C. P. Lund, president and treasurer; J. D. Marsden, vice president; F. A. Mann, secretary. They will manufacture brick and tile. Their clay beds are about nine miles from Seabreeze on the Halifax River.

The Coffeyville Brick and Tile Co. has been incorporated at Coffeyville, Kan., with a capital stock of \$75,000.00. The company will erect a plant to manufacture 10,000 bricks and 8,000 tiles a day, and it is their intention to have it in operation by February 1. The officers of the company are: J. E. Exner, president; W. A. Stuckey, vice president and general manager, and Charles E. Munso, secretary-treasurer.

Trade Prospects.

The city of Winnsboro, S. C., will erect an electric light plant.

Cando, N. D., will construct waterworks and a sewerage system.

Bellaire, Ohio, will issue bonds to build a \$15,000.00 public hall.

DeQueen, Ark., will spend \$40,000.00 to install waterworks system.

Mansfield, Ohio, will erect a high school building to cost \$40,000.00.

Winder, Ga., contemplates issuing \$35,000.00 in bonds for waterworks.

Marion (Ind.) Light and Heating Co. will build an electric light plant.

Escanaba, Mich., will issue bonds to erect a \$50,000.00 electric light plant.

Mineral Point, Wis., is to erect a \$25,000.00 brick and stone school building.

Rome, Ga., is to build an electric plant. Bids to be received up to January 15.

Steps are being taken to erect a \$40,000.00 government building at Henderson, Ky.

Harrodsburg, Ky., has voted \$18,000.00 in bonds to construct an electric light plant.

Bartow, Fla., proposes issuing \$15,000.00 in bonds for an electric light plant, etc.

Nashville, Tenn., is preparing to spend \$34,000.00 on street paving in the West end.

Madisonville, Ky., contemplates issuing \$20,000.00 in bonds for an electric light plant.

The Mendelbaum Syndicate, it is said, will erect a \$2,000,000.00 power house at Dayton, Ohio.

Gadsden, Ala., has granted a franchise to R. A. Mitchell and others to construct waterworks.

The Kalamazoo Valley Electric Light Co., Kalamazoo, Mich., is figuring on erecting electric power plant.

Hickman, Ky., is to have a new \$25,000.00 court house. Frank P. Milburn, Columbia, S. C., is architect.

The Indianapolis Northern Traction Co. contemplates erecting an electric light plant at Kokomo, Ind.

The Mountain Home Irrigation Power and Light Co., Mountain Home, Idaho, will erect an electric power plant.

Toledo, Ohio, will receive bids on contracts for paving streets up to December 8. For information address, City Clerk.

The E. T. Lewis Sewerage Co. has secured a sewer contract at Nashville, Tenn., involving approximately \$60,000.00.

The East St. Louis, Edgerton and Belleville Water Co. has been incorporated at East St. Louis, Ill., to construct waterworks.

The Pacific Union Club, San Francisco, Cal., will erect a five-story building of pressed brick and terra cotta, to cost \$200,000.00.

A school building to cost \$65,000.00 is to be built by the Gordon Avenue St. Colmon's congregation, Cleveland, Ohio. James O'Leary is pastor.

The Manual Training school building at Indianapolis, Ind., is to be improved, as are also the high school buildings, the total expenditure being nearly \$300,000.00.

The Merchants Light and Power Co., Montgomery, Ala., will build a \$100,000.00 electric power plant. The engineers in charge are Ludwig & Co., Empire Building, Atlanta, Ga.

The Elaborate Ready Roofing Co. has been incorporated at Chicago, Ill., with a capital stock of \$10,000.00, with the following incorporators: Mathias B. Becker, Ferdinand Becker and Harlan D. Cook.

Plaster.

A Business of Mysteries.

If ever there is a meeting of the plaster men—I mean those that operate mixing plants—and it is turned into an experience meeting, where those in attendance tell how they do it, I want to be there to see it, for it seems to me there are more untold things in the plaster business than in any other industry that has no more sign of mystery on its face than it has. There was published once in *ROCK PRODUCTS* a description of how gypsum is calcined into plaster, which was pretty close to the general line of manufacture as far as it went—and it went about as far as any outsider can go in giving information about the plaster business.

It is at the mixing plants where the mystery begins, and the more mixing plants you find, the more mystery you will discover, for every mixing plant has some special curves of its own on making plaster. I don't know that there is any use to complain of that, either, for there are all sorts of people in the world, and every different kind of plaster has a certain trade that takes to it—and there seems to be business enough for all. Then, to add to the confusion of mixtures, in which we have wood fiber, and almost every other kind of fiber you could think of, there is quite a variety of plaster made up with a solid body to be used without laths, in which paper and wood both are used. Some of the plaster men cover their special mixtures with a patent for protection, and these would probably not hesitate to make public the combination and process of manufacture, but, for all that, there is enough untold to make up one of the greatest experience meetings in the world if all the plaster mixers should get together and tell how it is done—but I am not looking for that to happen.

And, while you are speaking of the rapid growth of the cement industry, the gypsum plaster business has been doing some growing in this country, too, and there appears to be room for the producing end of it to grow some more. We are still getting quite a lot of gypsum from Canada, and while it has the reputation of being a mighty fine article, there seems to be plenty of undeveloped gypsum territory on this side of the border that will naturally want to grow some, even if it does become necessary to not bring in quite so much from the outside. The plaster business is something like the cement business, in that it must seek to travel about some toward points of increasing consumption, especially where good raw material is available, for by this means there is a saving in transportation that amounts to as much as the cost of the material in the first place, which is equivalent to saying that certain points in the West and South will just naturally develop plaster industries when the raw material is once sighted. But there is room for it to grow, for lumber is getting scarce and high, and that means more and more of the harder building material—and more mysteries in plaster mixing.

G. Y. P.

The Seeman Plaster Co. has begun operations at its new plant at Pierce, Ohio.

The Consumers Gypsum Co., Port Clinton, Ohio, has increased its capital stock of the preferred class from \$60,000.00 to \$75,000.00.

The United States Gypsum Co., with general offices at 184 La Salle Street, Chicago, Ill., now owns about forty plaster mills, and is doing a fine business, running practically all the mills night and day.

Plowing Asphalt With Mules.

There appeared in a recent issue of the *Kansas City Star* an interesting article concerning the asphalt beds of the Indian Territory. The bed under discussion is eighteen miles Southeast of Comanche in the Chickasaw country, and it is said that six strapping mules are hitched to the big breaking plow and the asphalt is turned from the bed in this manner. The field of asphalt there is said to be one-third larger than the asphalt deposits of Trinidad and the supply is apparently inexhaustible. Wells have been sunk to the depth of 100 feet and asphalt has been found of various thicknesses wherever they were sunk. A company has been organized with a capital stock of \$400,000.00 to exploit this asphalt. Among those interested in this company mentioned are the following: C. W. Brown, cashier of the Bank of Comanche; Stephen Brown, cashier of the Bank of Rush Springs; Dennis Flynn, of Guthrie, delegate from Oklahoma; Dr. A. G. Brownup, of Utica, N. Y.; Mr. J. C. Robb, of Kingfisher; Ex-Senator O. G. Young, of Kansas City; Charles F. Bil-



PLOWING ASPHALT WITH MULES.

lingsley, president of the Capital National bank of Guthrie, and C. D. Junson, cashier of the Noble County Bank of Perry, Okla.

The description of the process of working the asphalt states that after it is plowed scrapers are used to convey it to the refinery where it is dumped into a grinding machine, after which it is elevated to a tank. The first tank into which the crushed asphalt is put is nineteen feet long, four feet wide and six feet deep. Within the tank is a revolving screen three feet in diameter. The crushed asphalt is emptied into this screen. The tank is filled with water heated to a temperature of 212 degrees. The screen revolves in one direction while a fan-knife revolves within it in the opposite direction. This agitation separates the asphalt from the sand. The oil rises to the top and flows into a lower tank and the sand is carried without the refinery. The second tank, by a system of evaporation, carries off the lighter oils. The lower tank, which turns out the finished product, can be heated to any temperature desired.

Asphalt.

The Central Asphalt Co., Port Neches, Texas, has a plant in operation refining oil, and manufacturing asphaltum.

The asphalt plant of the Colorado Paving Co., Denver, Colo., was destroyed by fire November 23. The loss is estimated at \$50,000.00.

The Capitol City Oil Co., Austin, Tex., is sinking a shaft for asphalt on what is known as Walnut Creek. The work is in charge of Mr. Burke.

The Boorman-Anderson Asphalt Co. has been incorporated at New York City with a capital stock of \$1,200.00 by T. H. Boorman, J. R. Anderson and R. P. Wilson, of Brooklyn.

The Cory-Lauterman Asphalt Co. has been incorporated at St. Louis, Mo., with a capital stock of \$50,000.00. The incorporators are: George E. Cory, John S. Lauterman and Milton J. Moore.

The Ravia Asphalt Co. has been incorporated at St. Louis, Mo., with a capital stock of \$25,000.00. The incorporators are: Joseph L. Hanley, Frank H. Hamilton, Louis Barmeister and George A. H. Mills.

It is reported that Charles E. Billingsley, of Guthrie, Okla., and a number of bankers of different parts of the country have organized a company to develop asphalt beds of Comanche County, Oklahoma.

The Palestine Mining and Petroleum Co., Palestine, Texas, which was organized some years ago, seems to be about ready to proceed with the development of the sand asphalt property near that place.

The Ontario Asphalt Co. has been incorporated at Windsor, Ontario, Can., with a capital stock of \$150,000.00. The incorporators are: John Davis, R. Bengham, O. E. Fleming, Windsor, and J. D. Frost, Detroit.

Captain J. M. Brosius, 226 Oak Avenue, Jackson, Tenn., and others have bought asphalt lands in Alabama. In reply to an inquiry from this office, Captain Brosius writes that he and his associates own 750 acres, 99 per cent. pure silica, also 1,084 acres of sandstone asphalt which runs from 15 to 28 per cent. and as far as developed is 72 feet thick.

A report from Los Angeles, Cal., says that a plan is under way for the consolidation of all the principal asphalt refineries in California. Continuing, the report says that six local plants representing a possible monthly output of 2,500 tons of refined asphaltum, or over 90 per cent. of the output of this field, have agreed to "come in" if satisfactory arrangements are made. They are the Southern Refiners, with an estimated capacity of 800 tons monthly; Hercules, 600 tons capacity; New Franklin, 320 tons capacity; Union Consolidated, 300 tons capacity; Coombs, 240 tons capacity, and Densmore-Stabler Refinery, 200 tons capacity.

Production of Gypsum in the United States in 1901, by States.

STATE	TOTAL PRODUCT ShortTons	SOLD CRUDE		GROUND INTO LAND PLASTER		CALCINED INTO PLASTER			TOTAL VALUE
		Quantity ShortTons	Value	Quantity ShortTons	Value	Before Calcining ShortTons	After Calcining ShortTons	Value	
California.....	3,550	3,550	\$ 4,200	.....	.....	.....	.....	.....	\$ 4,200
Colorado and Wyoming...	17,394	150	150	16	\$ 62	17,228	18,595	\$ 76,223	76,435
Iowa, Kansas and Texas.	213,419	2,750	3,575	3,079	5,025	207,590	164,720	620,736	629,336
Michigan.....	185,150	46,086	47,986	9,808	10,708	129,256	103,983	208,549	267,243
New York.....	119,565	11,678	10,908	33,591	61,093	74,296	55,273	100,668	241,669
Oklahoma.....	15,930	.....	.....	.....	.....	15,930	13,205	66,931	66,031
Virginia.....	15,236	1,054	1,104	9,675	25,995	4,507	3,752	18,045	45,144
Other States....	89,415	7,401	8,850	9,529	20,267	72,485	58,430	218,318	247,435
Total.....	659,659	72,669	\$76,773	65,698	\$123,150	521,282	412,908	\$1,377,570	\$1,577,493

Government Buys Indian Asphalt Lands.

According to an agreement between the Choctaw and Chickasaw Nations, Indian Territory, and the United States, the coal and asphalt deposits and lands in these Nations, not exceeding a half million acres, are to be segregated by the Secretary of the Interior and, at the expiration of two years or before, sold at public auction by a commission appointed by the President. These coal and asphalt deposits and lands are to be located and segregated from allotment to the Indians by March 25, 1903.

Mr. Joseph A. Taff, geologist of the United States Geological Survey, has been detailed by the Secretary of the Interior to give the Dawes Commission expert advice in the selection of the coal and asphalt lands to be thus segregated. Mr. Taff has for several years past been engaged in the Indian Territory coal fields and is eminently qualified for this responsible duty.

Side Talk.

Sturtevant Centrifugal Crushing Rolls.

The 36-inch centrifugal rolls here illustrated are the largest made by the Sturtevant Mill Co., Boston, Mass. The tires are $4\frac{1}{2}$ inches thick, are of high carbon steel, and have sixteen tons pressure at ordinary speeds. They can be run as fast, or as slow as required, and attain greatly increased pressures when fast running brings in the rapidly augmenting centrifugal forces. These rolls, they say, have none of the destructive vibrations noticed in other rolls, for their shafts are fixed. They turn easily with one belt. The bearings are dust-proof, and the side adjustments remarkably simple and durable; tires may be removed in a few minutes. It is only necessary to turn in set screws in the head peripheries, which press back the tire spring weights; then the tire is released, and may be slipped off easily. When tires are replaced the set screws are taken out, and the tires at once secure themselves.

The manufacturers argue briefly the questions of large and small roll constructions in the following interesting manner:

"Since rolls crush by the pressures of their revolving tire surfaces, it is plain that if the tire widths and pressures are the same the output of all rolls will be in exact proportion to tire velocities, *regardless of diameters*. A small roll, therefore, may do as much as a large one, if the tires can attain the same speed.

"That they can do this in centrifugal rolls is beyond doubt, for they run easily at almost any speed—high or low—and the tire surfaces of the smallest centrifugal roll can equal the travel of the largest roll tires that can be constructed—and do as much work for the same width of tire.

"What then, is the advantage of the large, expensive common roll? The large, common roll has greater *grasp*, and can seize and break large rock. It is a coarse crusher; the small centrifugal roll, on the other hand, is a *finisher*.

"But the large rolls pay dearly for this single point of advantage, and the work they do can be much more cheaply done in a roll jaw fine crusher. Large rolls cost more to buy, to transport and to run. The shocks of crushing on their heavy backward and forward moving parts are destructive; repairs are expensive, and their big tires are not taken off, or replaced easily. Centrifugal rolls run with nearly the quietness of dynamos on *finishing work*. They can easily surpass, in any size, common roll velocities; and just here is met a consideration of *great* practical importance.

"In roll crushing, there is found for each ore, a tire speed that gives the *largest output* per pound of tire *wear*. This can only be determined by experience. In most cases this economical speed is found to be far above the turning ability of common rolls. *Any* centrifugal roll can run to that speed, *no other rolls can*.

"The wear of a small tire surface, even when running at the tire speeds of the largest rolls, is no greater than that of a large tire having the *same* velocity. In both cases the *same* amount of metal is exposed to wear in the same time. The smallest rolls, however, must not be used as coarse crushers; although in everything else they are superior.

"Large centrifugal rolls can run even on large rock at much higher speed than common rolls, and are well suited to either coarse or finishing work. In most cases centrifugals do three times as much as common rolls of equal size."

In a handsome circular of crushing and grinding machinery, which the Sturtevant Mill Co., of Boston, Mass., issue frequently, and gladly send to inquirers, this matter is further considered.

The Contractors Supply Co., of Chicago, handle the Smith concrete mixer and also a full line of supplies for the quarry and building trade, and have an excellent business. The Smith concrete mixer is a great favorite, two hundred of them having been sold since April 1.

We have received from Mr. Willard B. Richardson, Cleveland, Ohio, a booklet entitled "Brick Works Engineering," in which an announcement is made that Mr. Richardson's specialty is designing and directing clay working industries. He is also manufacturers' agent for a number of clay working industries.

We have received from the Atlas Car and Manufacturing Co., Cleveland, Ohio, catalogues No. 1008 and 1012. Catalogue No. 1008 contains illustrations and descriptions of dryers, cars, etc., for brick yards and cement plants, and catalogue No. 1012 contains illustrations and descriptions of some of the railroad equipments they manufacture.

The New Albany Manufacturing Co., the well-known manufacturers of various lines of stone-working machinery, at New Albany, Ind., report that they are extremely busy. Among recent orders that have been received, they report several stone planers, besides four electric driving cranes for stone yards and mills at different places.

The first calendar to come to hand for 1903 was from the Henry Martin Brick Machine Manufacturing Co., Lancaster, Pa. The face of the calendar contains a picture of one of their well-known machines, and on the back is illustrated quite a number of them. They will be glad to send one of these calendars to any readers who request it.

The Lunkenheimer Co., Cincinnati, Ohio, who are well known manufacturers of brass and iron goods for boilers, etc., formerly opened up their new works Saturday, October 25, to about 3,000 visitors and friends. The new buildings, of which

there are five, represent an investment of over \$300,000.00. They occupy about three acres of ground, and three acres of additional ground is provided for future extensions of the business.

Are you interested in drilling? If so, tell the Howell Mining Drill Co., of Plymouth, Pa., about it and have them send you catalogue of their line of drills. We have a special circular before us from that company of their Buffalo machine.

The Henry Martin Brick Machine Manufacturing Co., Lancaster, Pa., have favored us with a copy of their new catalogue of brick machinery, which not only contains illustrations and descriptions of various machines required to make brick by any number of processes, but also contains general plans for brick plants, and in addition to all this, contains illustrations of a number of special machines made by them in connection with the brick business.

We are pleased to number among our new advertisers The National New Process Lime Co., 36 Courtland St., New York City, and the lime men among our readers will find interesting matter in their advertisement. We note that they are building a plant for the New York Lime Co., near Natural Bridge to make new process lime, and they will be glad to figure with others on the same kind of work and give any information desired in regard to modern methods for making lime.

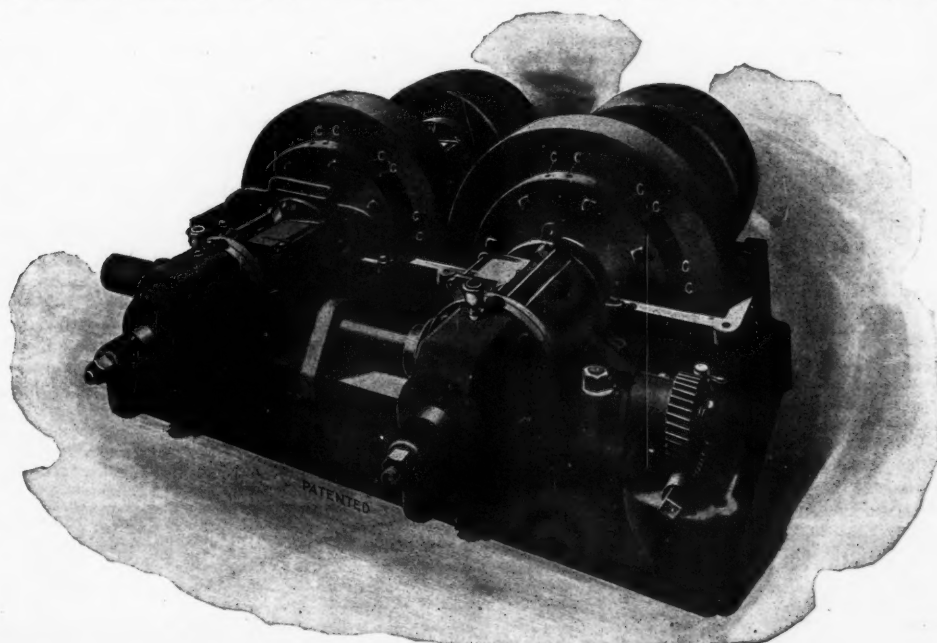
The Wood Fiber Machinery Co., Sandusky, Ohio, make machines for reducing wood logs 24 inches in diameter and 28 inches long to a fine wood fiber, which is being extensively used in the manufacture of wood fiber plaster. For this wood fiber they claim toughness and elasticity, and that it is a deadener of sound and a non-conductor of heat and cold, and that it has the greatest resistance to injury through the roughest kind of treatment to which plaster can possibly be subjected.

The J. B. Ehrsam & Sons Manufacturing Co., Enterprise, Kan., who are manufacturers of mill machinery and are specialists in the line of building gypsum, cement and plaster mills, etc., advise us that they have secured a contract to erect a 150-ton plaster mill for the Texas Cement Plaster Co. at Quanah, Tex. The headquarters of the plaster company are at Oklahoma City, Okla. The plant will contain a full line of Ehrsam's calcining kettles, elevators, plaster-mixers, hair-pickers and power-transmitting machinery.

A. P. Dyke, Hope, Ark., says he can give any one a liberal interest in oil lands as an inducement to put down a test well. He also says that he can show asphalt and gas as oil indicators. He also says that the St. Louis and San Francisco, Louisiana and Arkansas Railways are extending their lines into Hope, and will also soon reach New Orleans. He thinks with this additional stimulus, \$20,000.00 to \$25,000.00 invested in a brick block at that place, to be used for business houses and hotel, would pay a dividend of 20 to 25 per cent.

It is a sure thing that there will be beauty among the calendars for the coming year; at least it looks that way from those that have already arrived. We have one from the Harrison Supply Co., 32 India Wharf, Boston, Mass., which contains a beautiful picture which is entitled, "Between Two Fires," which might better read, "Between Two Flames," because it is a young man between two young ladies. The picture is beautiful, and the calendar is splendid, and any one in the trade can secure one for the asking.

Among our new advertisements this month we are pleased to number the Allis-Chalmers Co., Chicago, Ill., sole builders of the Gates rock and ore crushers, which you will find advertised in this issue, and a full and complete line of up-to-date machinery for all manner of rock crushing plants; and, in fact, almost everything in the rock product lines. They have a number of catalogues in which they have various machines illustrated and described, which they will be glad to send to any one interested on request. Take for example, book No. 1, which we have before us. It is devoted practically to the Gates rock and ore breaker, and book No. 4 relates to the general equipment of rock crushing plants. The thing for the reader who is interested in machinery to do, is to look up their ad. and then write them, telling the lines of machinery that they require, and they will send a catalogue that will furnish a fund of information about those very machines. They also issue a booklet containing letters from some of the users of the Gates rock and ore breakers, in which there are some good testimonials for these machines.



THE STURTEVANT CENTRIFUGAL ROLL.

Among our new advertisers this month is the Pittsburg Crushed Steel Co., Ltd., Pittsburg, Pa. This company desires to invite the attention of our readers to their automatic feed for stone-sawing gangs, which is an up-to-date machine of ingenious construction for feeding crushed steel, sand or any other abrasive to pumps supplying gang saws. The manufacturers say that this machine is a saver of sand, and saw blades, and also increases the capacity of a sawing machine, and enables better work to be done. The feeding mechanism is automatic and can be regulated and adjusted to any number of gangs being fed by a pump. This is a time of close competition and wide-awake methods and appliances of this kind should be investigated. This machine, they say, has already been indorsed by superintendents and owners of stone mills, and among the users who are already in line they mention: The Cleveland Stone Co., Cleveland, Ohio, who have in use twenty-five of the machines; The Independent Stone Co., Cleveland, Ohio, six machines; The American Quarries Co., Stonington, Ind., five machines. Ten of these machines are in different mills at Carthage, Mo. Perry, Mathews, Buskirk Stone Co., Bedford, Ind., are using one, and intend to install several more. The Carthage Marble and White Lime Co., St. Louis, Mo., operate one of the machines. Others users are: W. S. Piggins, stone contractor, Detroit, Mich., and R. Robertson & Co., contractor, Detroit. A number of other stone mills and stone contractors intend to inaugurate in their plants the automatic feed during this year.

Information Bureau.

370.—I want information relative to the cost of burning lime with coal; have been using gas, but that is getting so scarce and high I will have to use coal.

371.—I want to communicate with the manufacturers of machines for making hollow concrete building or foundation blocks.

372.—We are in the market for a sand dryer.

373.—We are desirous of obtaining the name of a good man who thoroughly understands how to burn lime with oil (we are now burning with wood), and knows how to put in oil fixtures for the burning of same. Such a man will command and can receive permanent employment.

374.—I want information on all material in connection with the erection of lime works; fire brick, sheet metal, rails, drills, boilers, tram cars, etc.

375.—I am interested in clay to make pottery ware, terra cotta and white brick, and would like to know what mixtures are used; also how many degrees of heat are used to fire them.

376.—We would like the names of parties or firms who would likely be interested in property containing large deposits of onyx that have never been developed.

377.—We are in the market for knock-down lime barrels.

378.—I am figuring on a fire-proof vault, and would like to get prices on doors for same.

379.—Where can I get sewer pipe at once?

380.—We want firms of Louisville cement; prefer those outside of combine.

381.—I am in the market for 3,500 12x12 roughly dressed granite coping for engine pit in round-house, and would be glad to have quotations on same.

382.—I would like to be put in touch with mortar color manufacturers.

383.—We want to arrange with different quarry owners, beginning with Indiana and Ohio, and extending over the entire West, to furnish us native stone bottom bases for our monuments in their respective localities.

384.—We wish the address of parties out of combines desiring to buy from Western quarry men.

385.—I am in the market for monuments.

386.—I want granite.

387.—We want oolitic stone.

388.—We want information relative to granite turning and polishing.

389.—We want information as to figuring cost on granite.

390.—We want a market for sandstone blocks of any dimensions; can furnish large blocks for sawing, also samples.

391.—We want prices on a hand saw for sawing marble and sandstone.

392.—We are in the market for slate roofing.

393.—We are in the market for 14-in. belting.

394.—We want steel "T" rails from 20 to 30 lbs.

395.—We are in the market for brick machinery.

396.—We want centrifugal pumping machinery.

397.—We want elevating and conveying machinery.

398.—We are in the market for fertilizer mill machinery to grind limestone for plate glass and cement.

399.—We need pulverizers.

400.—We want sand-grinding machinery.

401.—We are in the market for steam shovels.

402.—We want to make cement and brick from clay and want descriptions of machinery for same.

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LET US SELL that plant for you. See head of department for rates.

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BARGAINS in new and second-hand machinery. Address W. care Rock Products.

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RESURRECT the dead capital in that machine you no longer need by inserting the advertisement here. Quick returns at a small cost. Try it.

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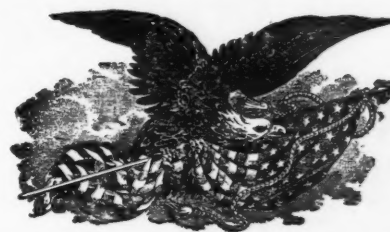
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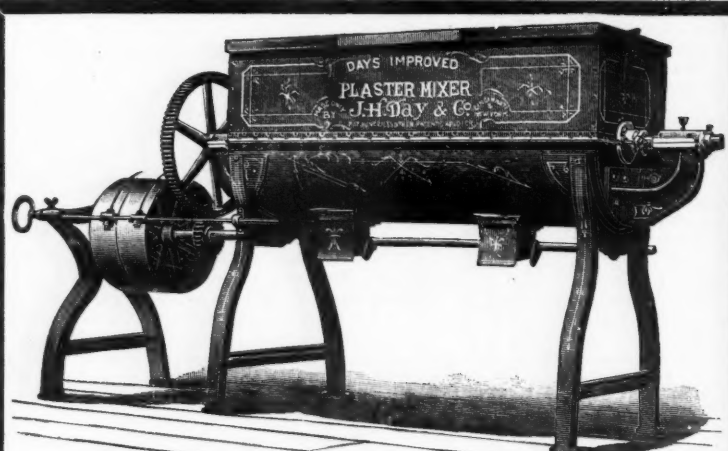
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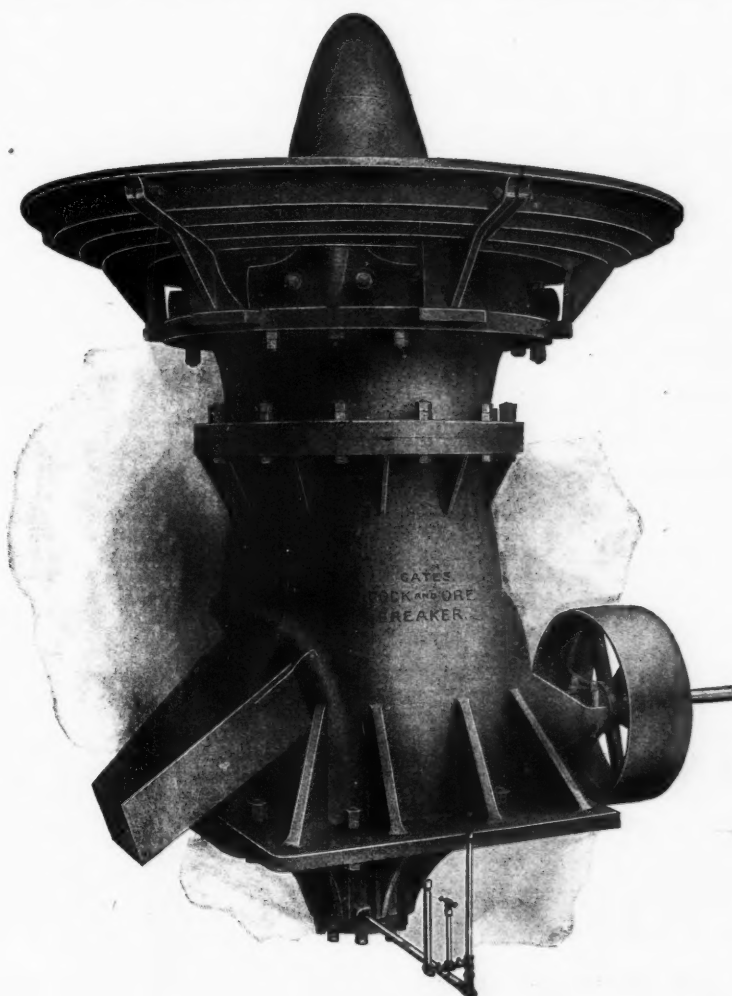
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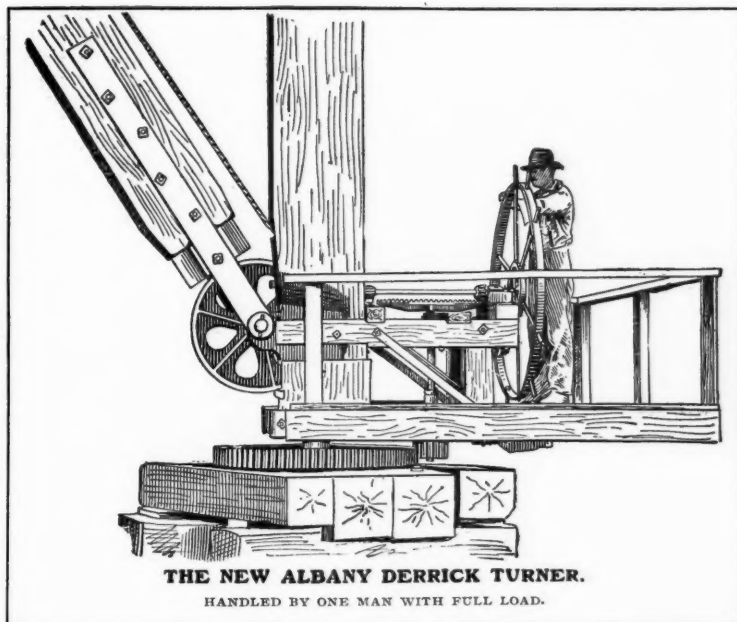
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